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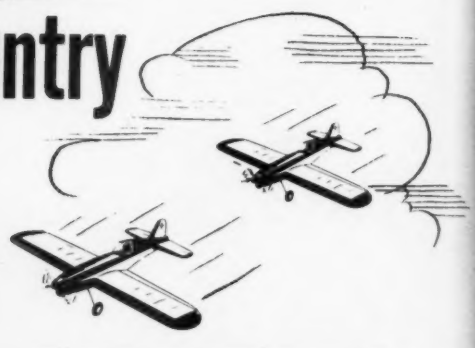

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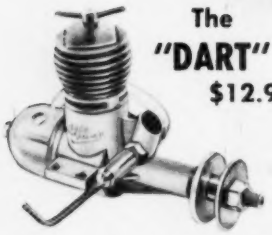

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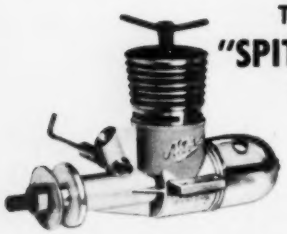

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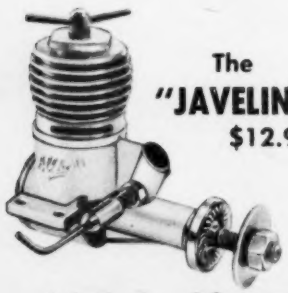

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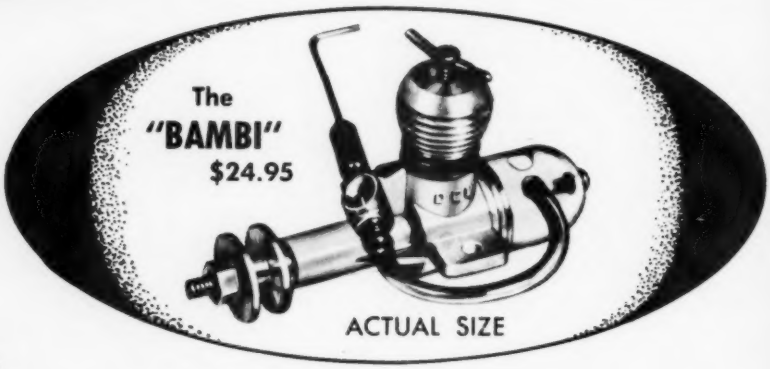

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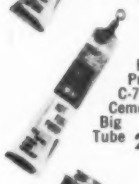
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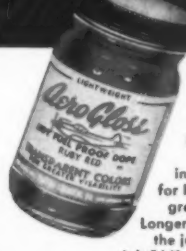

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MODEL AIRPLANE NEWS

26th Year of Publication

NOVEMBER 1954 Vol. LI—No. 5

CONTENTS

JAY P. CLEVELAND, President and Publisher
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Contributing Editors: Peter Chinn (England), Don Grout, Ed Lorenz, Ted Martin, Bruce Wennerstrom, Harry Williamson

Executive and Editorial Office: 551 Fifth Avenue, New York 17, N. Y.

Advertising Manager, N. E. Sians, 551 5th Ave., New York 17; West Coast Adv. Mgr., Justin Hannon, 4068 Crenshaw Blvd., Los Angeles 43, Calif.

Editorial and Business offices: 551 Fifth Ave., New York 17, N. Y. Published monthly by Air Age, Inc., 1140 East West Highway, Silver Spring, Maryland. Jay P. Cleveland, President and Treasurer; Y. P. Johnson, Vice Pres.; G. E. Johnson, Sec. Entered as second class matter Feb. 1951 at the post office at Silver Spring, Md., under the act of March 3, 1879. Additional entry at New York, N. Y.

Price 35c per copy in U. S. Subscription Prices—U. S. and possessions: 1 yr. $3.50; 2 yrs. $5.50; 3 yrs. $7.50; Canada: 1 yr. $4.00; All other countries: 1 yr. $5.00. Payment from all countries except Canada must be in U. S. funds. Change of Address—Send to MODEL AIRPLANE NEWS, Subscription Department, 551 Fifth Avenue, New York 17, New York, at least one month before the date of the issue with which it is to take effect. Send old address with the new, enclosing if possible your address label or copy. The Post Office will not forward copies unless you provide extra postage. Duplicate issues cannot be sent.

Printed in United States

by William Winter

Old Timers who remembered the pre-war Chicago Nationals in 1940 and 1941 are saying, "I told you so!" about the 1954 Nationals held at the nearby Glenview Naval Air Station. It was an old fashioned, rip roaring donnybrook, with occasional long lines waiting for timers, engines roaring in the night at the work hangar, potent thermals, rain and wind, hot sun (the Texans and Kansas said it was hot, so it was hot) and unquestionably the most intensive model flying, anywhere, anytime. Approximately 1,600 entrants—almost double some other recent Nationals—made the 1954 meet the biggest ever. For once, this statement is true.

What is a four-day Nationals like? Actually, it was four and a half days, if you count Clipper Cargo and PAA Load AB on Wednesday afternoon. But that wasn't even a warm-up. Take Thursday. At Glenview, there was Class B Speed, Junior Stunt, Senior Combat; at Chicagoland airport (a postage stamp surrounded by corn), 12 miles farther out, PAA Load rubber, outdoor hand-launched glider, free flight A and radio stunt. Some days were busier. You can end up knowing even less than the average contestant, who never gets to see it all, unless you plunk yourself down at one event for at least half a day. At this rate the Nats would have to last 20 days.

So we picked representative free flight and controlline events, which worked out swell until Guided Missile Day (C free flight) when Bill Dean, the visiting British modeler who was clicking shutters for us, found that even Englishmen shouldn't go out in the mid-day sun. Revived, he chased MAN at Work (proving there is something in a name) while said operator chased him. With 20 minutes left in the game, there were still ROW, helicopter and flying scale to be seen. Carrier, combat, radio control and speed were going strong, too. Lieut. Dick Moorhead, who led the Air Force team (they would have taken Team Championship, but getting to a downtown (*Continued on page 6*)

PLANE ON THE COVER

Most renowned of all World War I fighters was the sturdy Fokker D-7. Most interesting features for the time were the steel tube framework, and the fully cantilever wings. The interplane struts were unnecessary, but were demanded by conservative air authorities. Usually powered by the Mercedes 160-180 hp engine, the D-7 flew with many powerplants up to 230 hp. With 180 hp jobs, speed was 116.6 mph at 3,281 ft. Span was just under 30 ft. Had two synchronized Spandau machine guns.

NEXT MONTH'S COVER

Grumman F9F-9 Tiger, company's latest fighter for the Navy, is supersonic in level flight, can carry air-to-air or air-to-ground missiles. Powerplant is Wright J-65 Sapphire, developing 7,220 pounds of thrust without use of the afterburner. Wing tips fold manually. Points of interest are wing fences, leading edge droop slats, flying tail, double nose wheel, small tip ailerons for feel.

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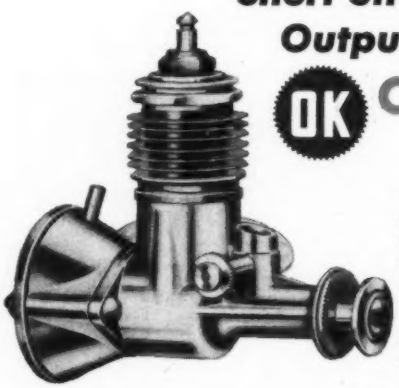

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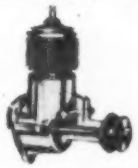

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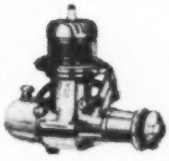

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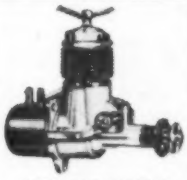

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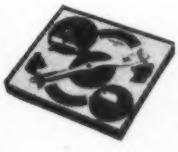

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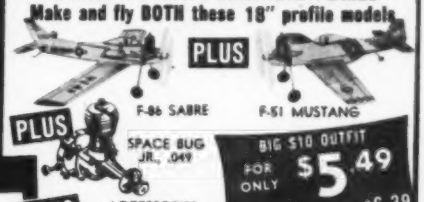

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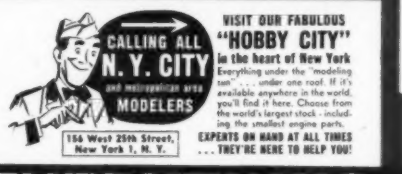

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MAN at Work

(*Continued from page 2*)

armory to chuck an indoor glider proved tougher than Korea and they goofed off to second place), was trying to break the PAA Cargo Endurance Record with a Beam on wires. After 33 minutes the Beam, with a 3 lb. chunk of lead up front, decided sensibly that it was much too hot for this sort of nonsense and came to earth.

So Wednesday, it was Chicagoland, and PAA Load AB. Some undulating pieces of sheet metal laid over the grass for take-offs. Quite a few of the jobs, of course, snagged their wheels, proving that 8 or 16 oz. in dummies really make a difference. Anybody who is anybody in free flight showed up for PAA Load: watched Sal Taibi, the old dependable, put one up; then Dick Sladek and Joe Foster, etc., fight for those Bulova watches. The boys tell us that when there is a prize at stake, Sladek gets mighty rough to beat. At the other end of the field, an RC flying saucer caught the eye. This turned out to be Fran McElwee doing inside and outside loops with gay abandon. Only other RC achievement that p.m. was deBolt's. His hat came off on the launch—everyone yelling at him—and settled jauntily on top of the fin. Scratch a Cruiser!

Broke the sound barrier to catch the climax of Clipper Cargo, back at Glenview. As the boys add weight—you've got to tote more than 25 oz., plus dummy, for that 40 seconds, to stand a chance—they try to keep the competitors in the dark. No one is supposed to know (spectators always know) what the score is. It's exciting fun to catch the wind-up of this event. But, doggone, it poured. From the sanctuary of Carl Goldberg's car (Carl was out in the rain recording the event) watched the poor, paper-sagged crates trying to get off. It seems that Herb Kothe, an old hand at this stuff, got there first with the most. His first flight with 25-1/2 oz., before the rain, stood up all day.

Did see what must have been modeling history's most interesting airplane, a pure-scientific approach by Larry Conover, who works for the great Dr. Lippisch, ex-German aero whizz here since the war. There's a picture elsewhere that gives the idea. Take a Burnelli-type airfoil fuselage, add two booms, with a stab roofing over the tops of two vertical tails and four-wheel gear; put the Space Bug, pusher fashion, into a barrel-like venturi at the trailing edge, and shake well. The ship weighed 17 oz. empty, had the 4 oz. dummy, a 25 oz. (at least) load, or approximately 46 oz. gross. The thing took off well and climbed fine but, unfortunately, wound in. Oddly, the engine keeps screaming after the clobber, because the prop is protected by the shroud. If you run into Conover at a contest, be sure to ask him why he calls this "dream" ship the Flying Dutchman. And, speaking of shrouds, another chap from the same group had an RC delta, with rear-mounted engine in a venturi. It flies, and controls well, we swear!

Thursday, it was back to Chicagoland for A free flight. Did see Alec Schneider make the best flight in RC for the week (he flattened the boys with his 7 ft., five-channel Cub) before jumping off. By the way, the first four places went to multi-channel, though a good rudder man could have placed high, so expect a rules change.

Free flight was 1947 all over again. The ships were bigger and the engines screamed, but otherwise it was the same. It was here that the meet management discovered what they were up against. With less available personnel and equipment than in previous years, free flighters arrived like locusts. At 2 p.m. counted over 200 people and 100 ships in line for timers. Couldn't help but think of 1941 in Chicago. Only they had 10 runways going all day to handle the rush. Here it was two, with

(*Continued on page 46*)

Flash News

Many developments push back the air frontier -- this monthly report will keep you in the know.

▼

By ROBERT McLARREN

Air Force is looking for a small turbojet engine in the 2,000-lb. thrust class to power its new supersonic drone and missile designs. Northrop Aircraft is readying its new supersonic target drone for production under an Air Force contract and a competition for a "decoy" drone, with which enemy radar may be confused, is now being studied at the Pentagon.

Fletcher Aviation Corp. has received an order for 100 of its "Utility" agricultural monoplanes, especially designed for aerial crop dusting. The planes will go to the Cable-Price Corp., a New Zealand dealer, who has already sold five to Robertson Air Service, New Zealand crop dusting company.

Douglas Aircraft Co. is now at work on the biggest airplane in the world, the XC-132 turboprop cargo plane, which is expected to have a gross weight of 525,000 lb. (surpassing the 400,000 lb. of the Hughes Flying Boat and the 407,000 lb. of the Convair B-36J, previous record holders). The monster will be able to haul a 100,000-lb. payload.

Capital Airlines has exercised its option for 37 Vickers Viscount turboprop transports and has taken a new option on 20 additional machines. With the three planes already purchased, this would bring to 60 the number of British transports in service with Capital by 1958. Capital plans to replace its entire fleet of Douglas DC-3, DC-4 and Lockheed Constellations with the new 48-passenger Viscount, which cruises at 335 mph on its four Rolls-Royce Dart turboprop engines.

Gen. Otto P. Weyland, new Commander of the Tactical Air Command, says that every fighter-bomber and every light bomber in his entire command is, or will be, equipped to carry atomic bombs. He reveals that TAC now has Republic F-84 Thunderjet squadrons in various parts of the world equipped and their crews trained to carry atomic weapons. TAC is scheduled to receive the fighter-bomber version of the North American F-100 Super Sabre.

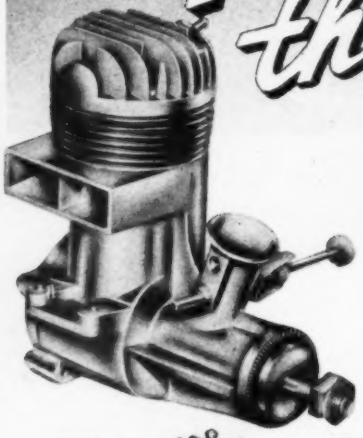
New Grumman F9F-9 Tiger attains supersonic speed in level flight with Wright J65 Sapphire engine with afterburner. Thin, swept-wing is flexible; entire upper skin is a single piece of aluminum. Startling new feature is "coke bottle" fuselage, which necks in sharply in vicinity of the wing to provide important drag reduction at transonic speed. Navy has ordered six prototype and 39 production machines from Grumman's new Peconic River, Long Island plant.

The Air Force has ordered a "limited number" of Boeing jet transports and deliveries are scheduled to begin in about 18 months. Known as the Model 717 Jet Stratotanker, the new design is expected to be considerably longer and heavier than the current Model 707 Jet Stratoliner and may weigh as much as 250,000 lb., compared with 190,000 lb. for the commercial passenger version.

Aircraft Notes: New Vought XF8U-1 day fighter will be powered by Pratt & Whitney J57 turbojet engine...McDonnell's new XF-101 escort fighter will have two P&W J57 engines, making it world's most powerful fighter...secret new Martin XP6M-1 Seamaster will have four Wright J67 engines of 10,000 lb. thrust, will fly next spring, will be offered in commercial version...Northrop F-89D Scorpion can operate above 50,000 ft...Convair now has five R3Y Tradewind turboprop cargo flying boats in flight test, one of which has stayed aloft more than eight hours...Navy is seeing really high supersonic speed in the Grumman F9F-9 Tiger version powered by General Electric J73 engines, but first production group will stick to Wright J65 with afterburner...Convair YC-131C, Allison T56-powered Liner, has reached 39,000 ft. and 370 mph speed in flight tests...Allison's Convair Turbo Liner is now on tour to test passenger and guest-crew reaction to turboprop power... Westinghouse may decide to build Rolls Royce Dart engines in this country under its license with the British company if many more Vickers Viscount orders are placed by U.S. airlines; Convair is reportedly studying four-Dart version of its 340 Liner as answer to the growing threat of the British transport...North American may re-enter civil plane market with multi-engine corporation transport selling for "under $300,000"...North American has completed No. 2 TF-86 two-seat Sabre trainer and will resume demonstration tour interrupted by crash of prototype last spring...Glenn L. Martin Co. has completed first B-57B Night Intruder, which replaces bulbous canopy of original Canberra seating arrangement with trim, tandem arrangement for pilot and co-pilot under familiar longitudinal canopy; new model features aft-fuselage air brakes, racks for bombs, auxiliary fuel tanks, rockets or napalm tanks.

Again! Fox Sweeps the Nationals!

FOX POWERS ALL FIRSTS IN STUNT—COMBAT—TEAM RACING!



FOX WINS MORE TOTAL PLACES IN

• STUNT • COMBAT • TEAM RACING

• RADIO CONTROL • NAVY CARRIER

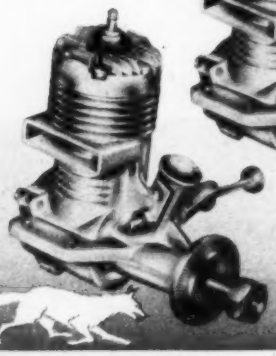
—THAN ALL OTHER MAKES OF MOTORS COMBINED!

FOX 59

FOX 35

FOX 29

FOX 25



FOX 19

SPECIFICATIONS:

Engine:	Bore:	Stroke:	Weight:	Mount Interchanges with:	Price	(2-Speed)
FOX 59	.920	.900	11 oz.		$22.50	$24.00
FOX 35	.800	.700	6 oz.	FOX 19, 25, and 29	$14.95	$17.45
FOX 29	.738	.700	6¼ oz.	FOX 19, 25, and 35	$14.95	$17.45
FOX 25	.738	.600	5 oz.	FOX 19, 29, and 35	$12.50	$13.50
FOX 19	.650	.600	5 oz.	FOX 25, 29, and 35	$12.50	$13.50

FOX ENGINES SWEEP THE 1954 NATIONALS

All 1st, 2nd, 3rd, 4th Stunt Places

R. B. Pharis	1st Stunt, Jr.
A. P. Pawlosky	2nd Stunt, Jr.
T. M. Ebejer	3rd Stunt, Jr.
E. J. May, Jr.	4th Stunt, Jr.
C. Nill Hutchins	1st Stunt, Sr.
J. G. Ebejer	2nd Stunt, Sr.
D. E. Sherill	3rd Stunt, Sr.
J. Pyron	4th Stunt, Sr.
D. Still	
R. J. McDonald	1st Stunt, Open
G. M. Aldrich	2nd Stunt, Open
D. Ferguson	3rd Stunt, Open
	4th Stunt, Open

Fox Powers All Combat Winners

Wm. S. Trevisan	1st Combat, Jr.
Miss S. A. Austin	1st Combat, Sr.
Frank Adams	1st Combat, Open

Fox Powers Team Race Winner

George Meier — 1st

Fox Powers Navy Carrier Winners

Dave Domazi	1st Navy Carrier, Sr.
Wm. F. Netzeband	1st Navy Carrier, Open

FOX MANUFACTURING CO., Inc.

7401 VARNA AVENUE, NORTH HOLLYWOOD, CALIFORNIA

Thundermug, Atwood .49 Triumph, lives up to its name with fast, noisy take-off in ROW event. Flown by Paul Marchal. Float has drooping edge.

A long skimming take-off resulted when C. O. Wright let go of his largish Taylorcraft on Space Bug power. C. O. flies several events every year.

When the wind came up during Class C free flight, the place began to jump—out of the way! Here Jack Saver launches an elliptical wing ship.

The 23rd NATIONALS

The biggest Nationals, about 1,600 entrants, will go down in history as the "four-day" or "condensed" Nationals. Everything, good or bad, was accentuated. Proved: Chicago draws a crowd.

▸ The 23rd Annual National Model Airplane Championships, held near Chicago, July 28 through August 1, attracted approximately 1,600 entrants, no doubt because of the traditionally strong support the Midwest and the Chicago area always give to the "big" meet. As has been usual in recent years, the National Exchange Club sponsored the contest and our good friends, the U. S. Navy, acted as host. Most of the activities centered around the Glenview Naval Air Station, outside of Chicago, but on those days when the Station could not be shut to all air traffic, free flight events were conducted at the Chicagoland Airport well to the north of the city. Indoor events went on into the evening, when necessary, at a downtown armory.

The 1954 Nationals were different from those in early years. First, was the huge turnout; secondly, the fact that 36 out of 38 events were crammed into four days. The combination was rough on contestants, but rougher still on the gallant volunteers who came from all over the country, giving up vacations, for the privilege of getting flat feet and heat prostration, in line of duty as Contest Directors.

With everything bigger and more concentrated than ever before, busy contestants were hard put to get from event to event. When one or two free flight events moved slowly, many a would-be champion gave up in frustration, but this

Winding a PAA Load rubber-powered model is Harold Rake. This tough event was won by Woody Blanchard, helped win Open championship.

K & B's Lew Mahieu was looking over this scale job when camera happened by. Often winner free flight, speed, PAA Load, Lew watched.

Harold deBolt used to fight it out in speed but this symmetrical winged liaison type multi-control RC kept him busy in '54. Does outside loops.

Top Flite's Carl Goldberg, left, and George Gardner, from Pan American, keeping tabs on flights being made by cargo carrying Half-A airplanes.

was just routine, a mite strenuous, perhaps, to the three famed lads who won the championships (picture herewith).

Among the pleasant surprises was the increase in numbers of scale models, both free flight and U-control; the popularity and appearance of trends in combat, where Shirley Austin, Kirkwood, Mo., made the boys look sad flying a local job known as the Half Fast, and the tremendous outpouring of free flight models. Underlying the whole thing was an interest in the odd originals that were flown, mostly for the fun of it, all during the week.

Speed models traveled faster than ever before. As usual, the big thrills came in the closing minutes of C, where the winners hovered about the 160 mark. Speed was the keynote of the contest. Even the trophies were awarded in less than three hours (such sessions have been known to last until two in the morn). In the past, delays have occurred on final night as reams of results had to be tallied. But this year mimeographed copies of the results were handed out early in the evening to every entrant seated in the Station theater. Even the speeches were speedy!

Many reactions to the four-day schedule. Every Nationals is a compromise in one way or another. There is always the business of what Naval Air Station will be available, and when, and how does that fit in with everyone else? Does the Exchange have an active group in the area? But, despite the rough spots, we're pretty well off. Who remembers Minneapolis? Or Wichita?

One hallowed custom went by the board, and that was the traditional victory banquet. Once, in Detroit, the management was out of funds coming up to banquet night. Someone bumped into a stranger and told him the sad tale. Turned out to be Roy Howard of Scripps-Howard, so the story goes, who chipped in in the nick of time. Another "banquet" was held in the parking hold of a lake steamer: contestants marched through Detroit streets with a band of bagpipes at the head. One city served franks. But of late things had degenerated into outdoor barbecues and box lunches. So no voices were raised in protest at Glenview.

Meet the champions, L to R: Joe White, Junior; Woody Blanchard, Open; Bill Gelvin, Senior. To win championship you've got to enter many events.

Common to all Nationals are the rumors and rumors of rumors. Indoors not long for this world, some say. Others get fighting mad at the mere thought of there being no indoors at Nationals. So many people say stunt rules will change

Jim Walker always has something new to demonstrate. This time, it was small, beginner U-control type with a unique, sure fire throttle changer.

Among the free flighters who never will forget all that corn is Don Assel, emerging after a successful hunt for his A free flight. Swamps, too.

O & R's Frank Nekimken waited on hangar hobby counter; talked incessantly with the modelers.

Some spend time building! Bob Hodges at work on a Sterling Corsair. Everyone has good time.

Duke Fox was taken by George Moir's reworked .29 that ran like mad to take team feature race.

The Guillow Trophy for outstanding achievement being presented to Ray Harlan, of Yeardon, Pa.

Bob Yeomans, winner scale U-control Open, also got Testor trophy, best finish, from Mike Brophy.

Another for Carl Wheeley. Got Berkeley award, contribution to model aviation, from Bill Echols.

that it is more than likely the next two years will see some important alterations in the rules. They mean even throw out the pattern points. Knock down appearance points. Add a triangular loop and so on. Only a few years ago it was thought appearance points would make stunt jobs look like something. Now, 'tis said, appearance points give the advantage to the crack builder and they don't like this either.

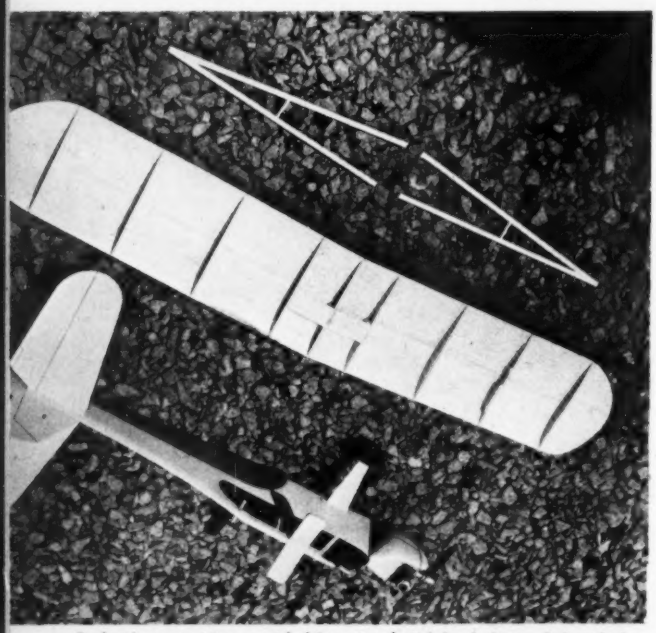
Combat, that relatively new, and still growing, event, is suffering growing pains. Boys around the circles think disqualifications should not be made before a "kill." Looks, too, as if the scoring system will have to be improved. In flying scale free flight, not all the participants at Glenview are happy with the status quo. Why just Half-A, some ask? And others would throw the event open to all kinds of power, even Jetex.

The RC boys were talking of breaking things down into single and multi-control. Even talking of qualifying flights.

Next year, of course, the Nationals are slated to go to the Coast, under the rotation plan, and, in 1956, the Nats will be in the East. It is more than likely that the attendance record will not be approached until we return to the Midwest in 1957.

But it is unlikely we'll ever see anything quite like the now famous Chicago four-day Nationals, which could not have been, except for the AMA and, for that matter, the Navy, and everyone else who helped. END

Real looking, wouldn't you say, for a profile with sheet balsa wings? Weighs about 10 ounces ready to go. The wing measures 34 in. in span.



Each wing panel is assembled from two butt-joined pieces of sheet balsa. Note how panels join at the center, also fill-in at the point of support.

Nice little crate no matter how you look at it. And, knowing Harry, you can count on it to fly as well as it looks. Cub engine shows this shot.

The CHAMP

by HARRY WILLIAMSON

If you haven't got around to that super-duper scale job, why not let off steam with this well performing sport model. For .039's-.049's, it's robust, good looker. Swell subject for first gassie.

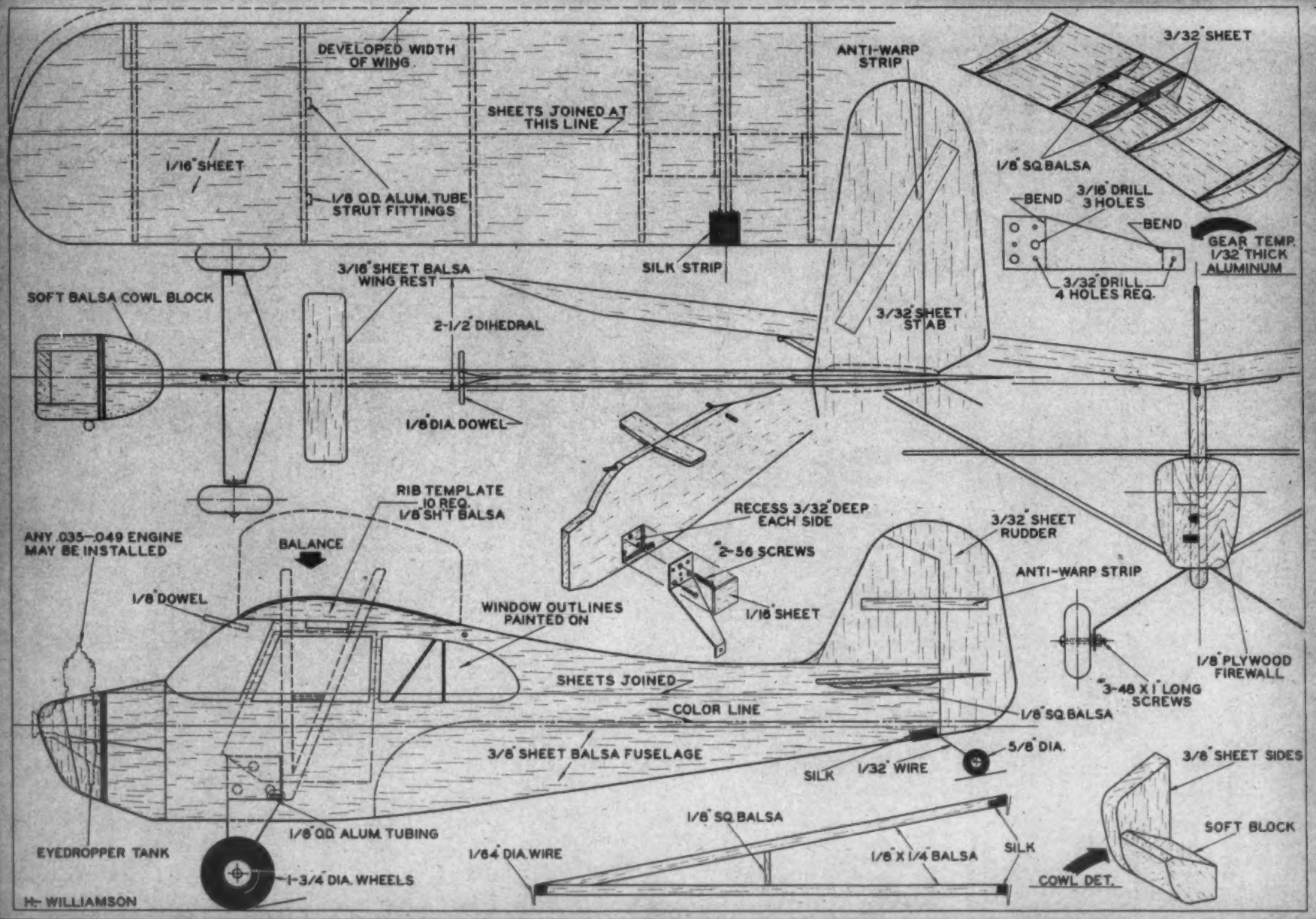
How many times have you said to yourself, "One of these days I'm gonna build me a scale free-flight job," only to find that you never quite got around to it? If you're like the rest of us, it's probably happened numerous times. There's always a good reason why it never comes to pass but the root of the difficulty seems to be insufficient time or a reluctance to put forth the effort required to produce a good-looking scale job. Then, too, there is always that nagging fear that the prodigious labors put into the true-scale model may be instantly dissipated in a crack-up.

Well, maybe we have the answer to an embryo scale free flight modeler's dream! The Aeronca Champion model described here provides all the kicks of scale flight, with a big reduction in the labor required and, in addition, it is strong enough to take the punishment normally meted out during flight tests by the less experienced builder.

A conscious effort was made to keep this model as close to scale as possible in outlines, except for the changes required to provide stability and complete simplicity. Any Half-A engine between .039 and .049 displacement will start you in business. The ship ready to fly weighs about 10 oz. with a wingspan of 34 in. and an area of approximately 170 sq. in.

Trace the outline of the fuselage on a piece of stiff cardboard and, using this as a template, trace the outline on 3/8 in. sheet balsa. Carefully cut around the outline (don't forget the slot 3/32 wide for the stab) and edge-cement the sheets together as indicated on the plans.

Mark off the location of the landing gear on both sides of the fuselage and carefully gouge (*Continued on page 37*)



FULL SIZE PLANS AVAILABLE. SEE PAGE 52.

Hiller Trophy winner, helicopter, Parnell Schoenky, some of his ships. Jetex Scorpion, front.

Noted stunt model designer, Bob Palmer, with a nicely finished job. But it flew rather fast.

This 62-in. Hawk P-6E, by Fritz Lindgren, had a Forster .99 for power, weighed 10 lbs. Flew.

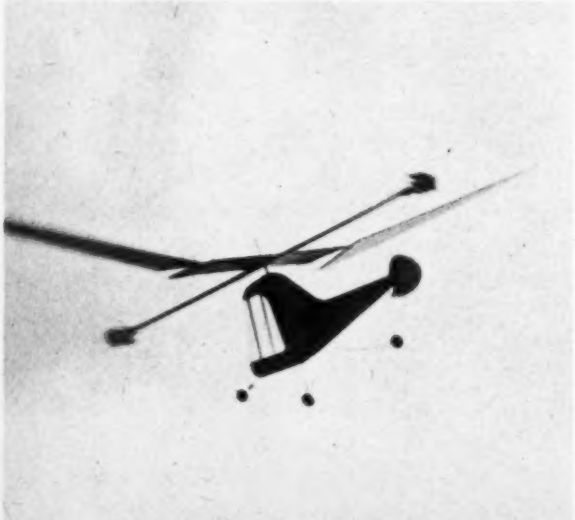
AIRWAYS AT THE NATIONALS

In five days over 5,000 planes got into the air. These random shots will give you the idea.

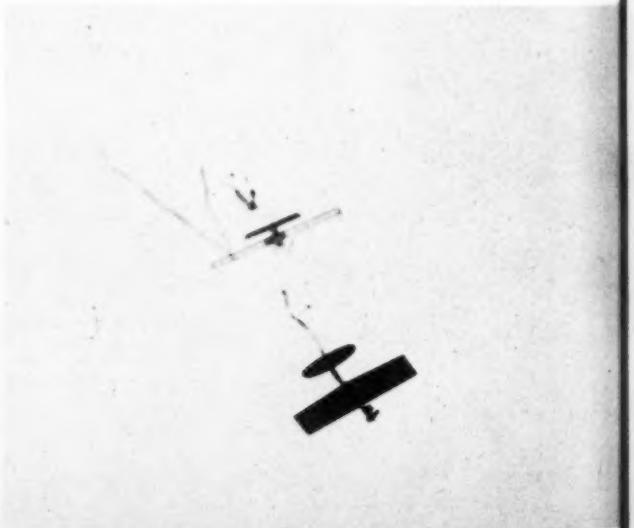
Bob Yeoman won the Nats Open scale, also Mirror Meet, with 60-in. Neptune. Took 1,000 hrs.

Nobody, was name of Don Still's combat wing. A Torp .35, 465 sq. in. Some wild man creamed it.

Eight months' research put into Jimmy McCroskey's F-51H Mustang. Winner, Senior, ukie scale.



Schoenky's whirlybird in flight. Half A 'copters were going speck high. Oddly, some developed dive-ins a la free flight, folded their blades.



Don Burrow, top, was getting best of Art Cangialosi, in this round of combat, but the final placing in Open had Art third and Don fourth.

Balloon buster. One of Jim Walker's many acts is to put pin on Fireball, back down on balloon.

David Domizi outscored all classes in carrier. Only 125 sq. in., on Fox. 29, 22-ounce Guardian.

Fairchild 24 won Open Half A scale for Ed Stoll. Wasp .049, 6 x 3 prop, and 193 sq. in. area.

Tops in RC was Alec Schneider's 7-foot, redesigned Cub. Elevator, rudder, engine (Spitfire) .60 ignition. Touch-and-go, inverted, etc.-Most reliable.

Original flying saucer, K & B .049, by Jim Engelhardt, provided amusement all through meet. More interest in dramatic, out-of-world stuff.

Manuel Andrade launching Joe Bilgri's fifth place open Nordic towline.

Catherine Sieh with husband's 3-1/4-lbs. delta. Craft handled well in RC.

Still stranger Cargo job, by Larry Conover, displayed by Mrs. It flew.

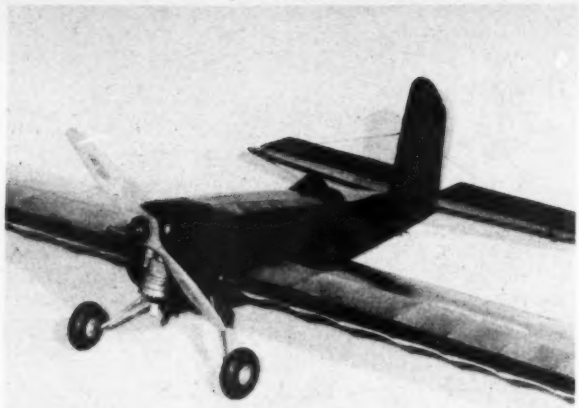
The author with his Twelve which won or placed second in every 1953 contest entered under WAM rules. One Twelve used 12 gallons of fuel.

THE TWELVE

by JACK RITNER

Evolved from a long series of designs, this .29 to .35 powered stunter is popular in the San Francisco area. A winner, it is a cinch to build.

Thoroughly "debugged" over two years of contest flying, The Twelve will do either large, round maneuvers, or sharp, square corners, with ease.



Simple, functional, The Twelve combines good performance and construction, simple design. Fox .29, 9 x 7 prop, 60-foot lines, does 90 mph.

This is the twelfth model in a series of stunt and combat models. It is especially suited for Fox, Torpedo and Veco engines of .29 to .35 cu. in. displacement. Although this model is extremely maneuverable, it is so easy to fly that many fellows in San Francisco have learned to fly the entire AMA stunt pattern with a Twelve.

This airplane is capable of doing large and round, or small, square-cornered maneuvers, with ease. It has been completely debugged during the two years of its life, and is capable of winning contests. Twelve's contest-winning ability is well displayed by my success with the design during the 1953 contest season, wherein my Twelve won or placed second in every contest entered under Western Associated Modelers' sanction. This record resulted in a place for me on the 1953 Northern California Plymouth Team.

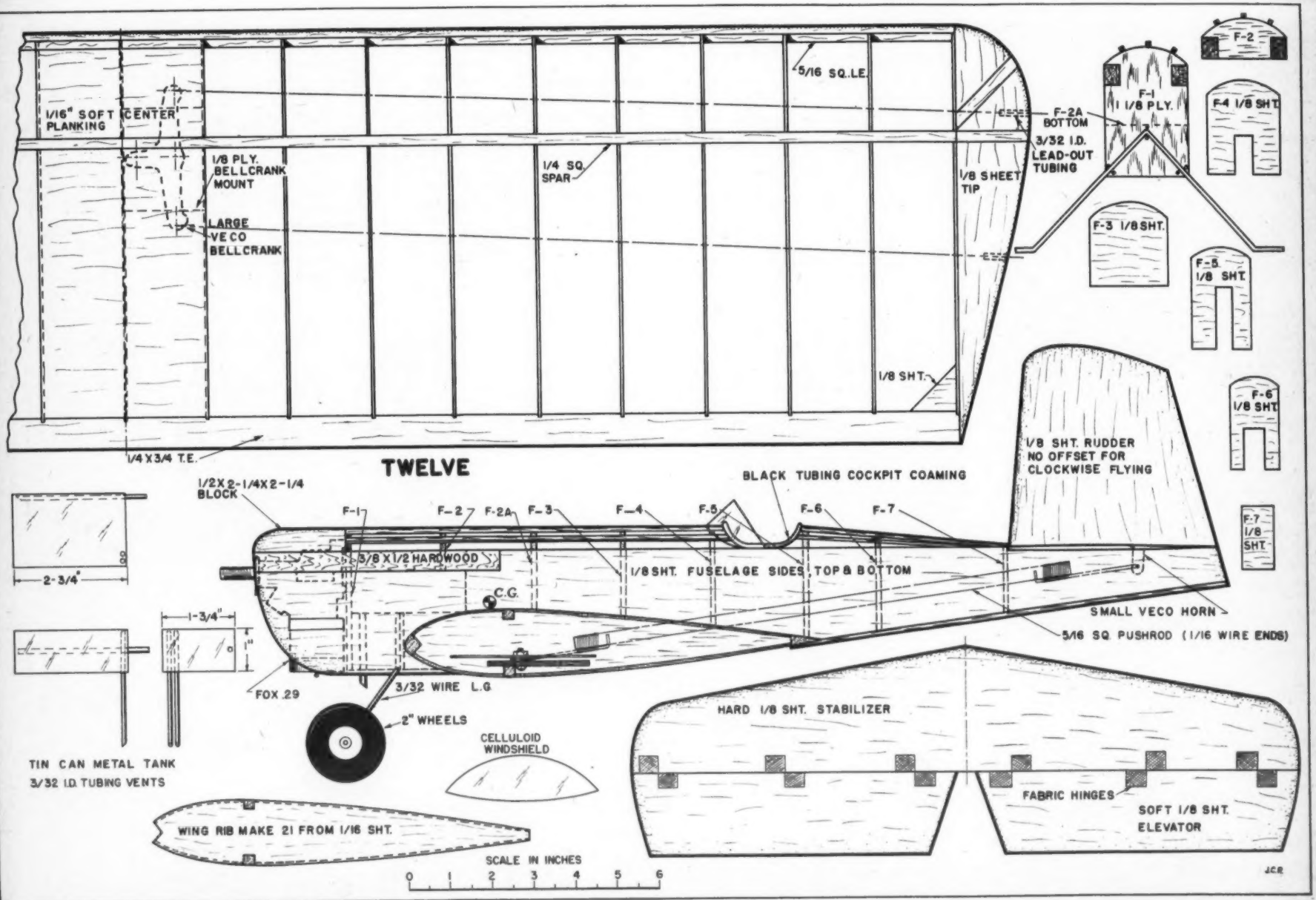
In building, use a good grade of lacquer cement on all parts or you will end up with a silk bag of loose parts after a few flights, as Twelve flies 90 mph on 60-ft., .012 lines with Fox .29 and 9 x 7 prop. Cement motor mounts to fuselage sides; let dry; cement firewall to motor mounts and sides; install gas tank.

Build wing in normal manner: the three center ribs are shown dotted. Plank center bottom, install bellcrank and push-rod, plank top center. Cement fuselage sides to leading edge, pull tail end together and cement, add tails (use hardest 1/8 sheet for stabilizer you can find), and add fuselage formers and the three 1/8 square stringers. Install landing gear, bottom sheeting, bolt engine in and install top nose block. Sandpaper the entire structure, double cement every joint, and cover the entire model with silk. Apply three coats of clear nitrate dope, two coats of clear butyrate, and two thin coats of colored butyrate trim. The finished model should weigh between 18 and 24 oz.

Your Twelve, if properly built, will reward you with many hours of trouble-free operation, for it is not easily ruined. Practice is the keynote to winning stunt contests, so try to wear out your Twelve. I have a Twelve with at least 11 gallons of fuel run through it which is working on its third engine and still going strong.

Fill the fuel tank through either vent. When fuel runs out the other vent with the model in a normal position, the tank is full. For best results, plug the vent on the outside of the circle, after filling, with a wood screw and a piece of neoprene tubing. This tank will run exactly as you set it on the ground.

END



FULL SIZE PLANS AVAILABLE. SEE PAGE 52.

Air Force flew contestants, La Guardia to contest site. Holding box, Johnny Tatone, and Mrs.

Carl Hermes, left, with Jackson's model. Ship placed second in Wakefield, for Great Britain.

Arne Blomgren, Sweden, placed sixth. Arne took first 1952. Stark, Sweden, won in 1951.

Did Montplaisir push O'Donnell's model (Britain) on disqualified round? Stupid, obsolete rule.

From far-off Japan, came fellow modeler Kiyotatsu Miyoshe, with this capable looking design.

Dubbed the "Mig" by other boys was Guatemalan entry flown well by Andrew Bobkowski.

With team manager Jerry Thomas holding, Bob Dunham—a fifth for the USA—packs in the turns.

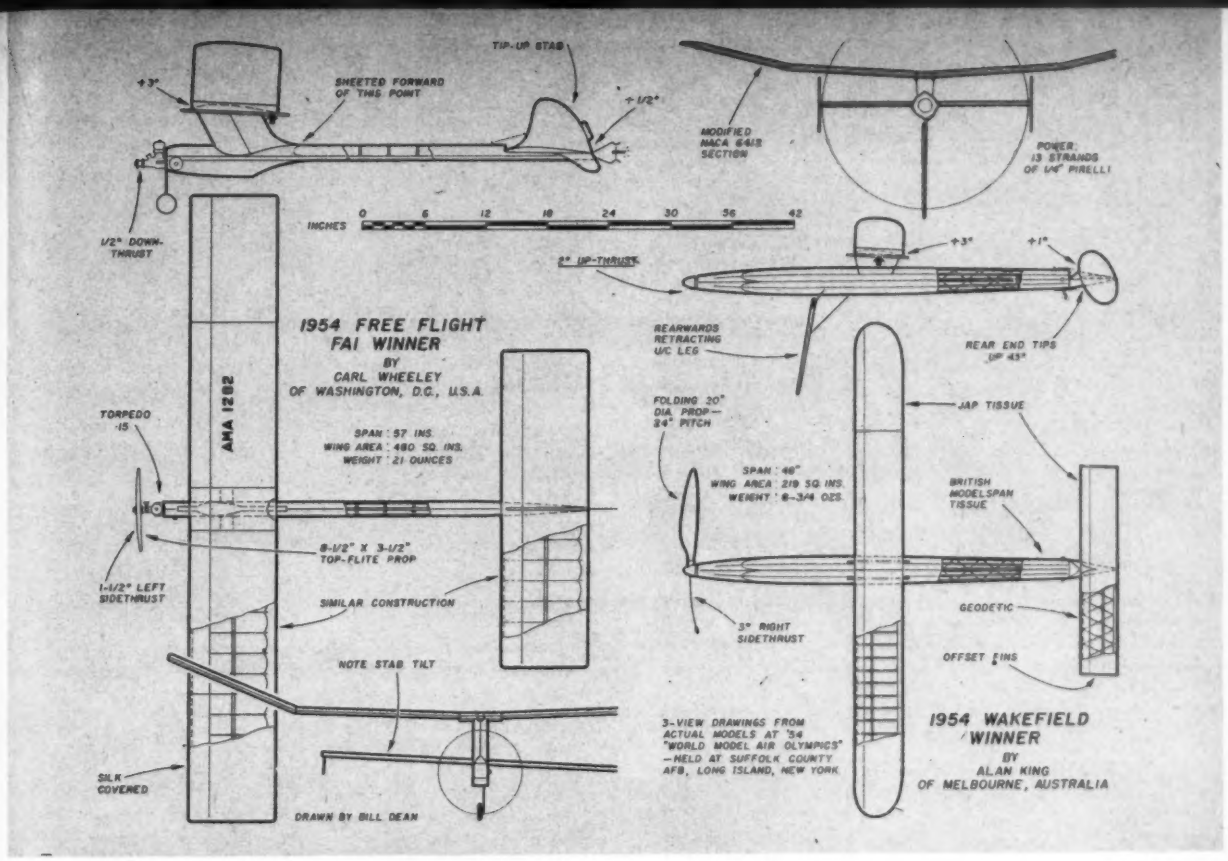
Popular with all, Carlos Gonzales de Cosio, Mexico. Lost FAI on test. A sportsmanship award.

1954 Wakefield and F.A.I.

Sponsored by Convair, with Air Force as host, the World Model Air Olympics took place at Suffolk Air Force Base, N. Y. The eleven nations represented put on a tip-top show of flying, with America retaining the FAI gas trophy, Australia winning the historically famous Wakefield.

Francisco Stajer, Argentina, checks his timer before round two launch. These boys really hot.

Canada threw a scare first two rounds. Bill Etherington set for first round ROG. Fast climb.



AMA's own Carl Wheeley . . took first FAI in last round thriller over Dave Kneeland, Switzerland's Lanfranchi, and Britain's Gorham. What pressure!

Alan King, Australian champ, had five maximums to win. Reserve model shown made fifth round. Prettiest rubber job. Detailed plans, page 23.

By virtue of their wims in both the '53 Wakefield and FAI World Championships, American modelers played host at this year's contests, which took place July 24 - 26 at Suffolk County AFB near Westhampton, Long Island, N. Y. Lt. Gen. "Jimmy" Doolittle acted as Air Marshall and Convair ably sponsored the meeting, which was billed for the first time as the "World Model Air Olympics." Weather conditions were warm and dry, with only medium strength winds, and a highly efficient recovery service returned most of the fly-aways to the field in double-quick time.

Winner in the FAI free flight event (July 25) was the AMA's 24-year-old Technical Director, Carl Wheeley, who flew the same ship he took over to the '53 Cranfield meeting. Carl scored 180, 135, 180, 180 and 169 (844 sec. total), to place just 13 seconds ahead of Switzerland's Silvio Lanfranchi.

Last year's winner, Dave Kneeland, was well in the running, but dropped to third place in the final round after a kingsize downdraft clipped what should have been a 180 max to 101, giving a total of 783 seconds. John Gorham's British VTO entry (flown by *American* proxy Bill Dean of Winchester, Mass.) was a hot contender for first place until the last round, when a four-second motor run killed his chances with a 64-second flight time, placing him fourth with a total of 723 seconds.

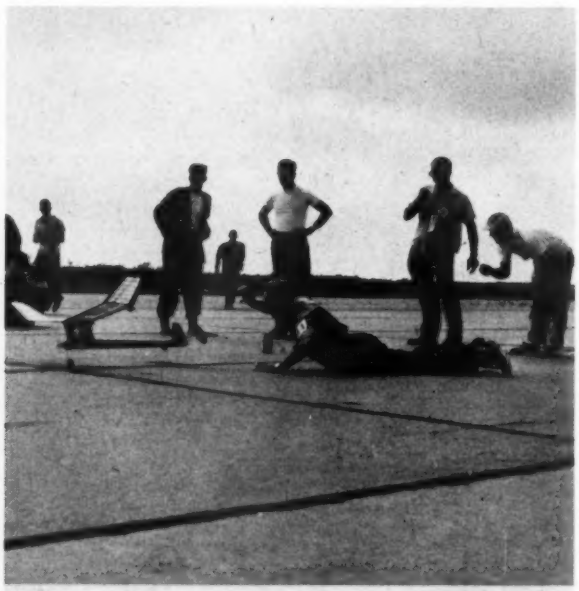
The K & B Torp .15 was the most popular powerplant, being used by 17 of the 21 contestants, including the top three on the list. Wheeley's 57 in. span model was a development of his old Senator design, with untapered flat-sectioned surfaces of 750 sq. in. total (see three-view). Top team places went to the U.S. with a "top-three-men total" of 2,204 seconds. The two American team members not already mentioned placed eleventh (John Tatone) and twelfth (Ray Lagermeier). Second and third place teams were the Argentinan and Canadian, respectively.

This year's Wakefield event (July 26) fell to 26-year-old Alan King of Melbourne, Australia, who recorded five 180

Cool, confident, Dave Kneeland wowed them with terrific climb but hit a monstrous fifth-round downdraft to fall from first to third place.

Greatest proxy flying job we saw was America's Bill Dean handling Gorham's VTO. MAN at Work, helmet, background, watching Dean go.

American flag on pylon, part of gay red-white-blue color scheme, Tatone's job here taking off. Johnny is a master at finishing planes.



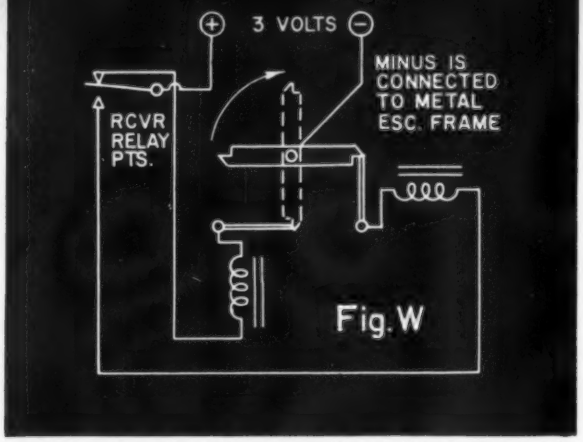
The man no one will forget was Silvio Lanfranchi. One of the world's great free flight artists, he gave great demonstration, almost won FAI.

maximums, to score a perfect 900-second total. Alan flew a reserve model after losing his first-line job in the fourth round. Second place was taken by Charles Jackson's British entry (flown by U.S. proxy Carl Hermes), with 146 seconds in the first round, followed by four maximums (866 total). Third went to Allan Lim Joon of Australia (863 total) and fourth to Jack Upton of New Zealand (844), these models being handled by U.S. proxy fliers Manuel Andrade and George Reich. Britain's Hugh O'Donnell slipped from a high place on the list when his proxy-flown entry suffered a last round flight disqualification as a result of a "follow through" on take-off.

Total entries in Wakefield numbered 28 and the American placings were fifth, ninth, tenth and sixteenth (Bob Dunham, Dick Baxter, Warren Gillespie and Bob DeBatty), to win again the team championship trophy with 2,404 seconds. The British and Canadian teams placed second and third, respectively. Alan King's sleek 48 in. span winning design (see three-view) featured an eight-sided fuselage, single-bladed folder, parasol-mounted polyhedral wing, twin fins, geodetic stab and single leg retracting under carriage.

Eleven nations — including Guatemala, Japan, Mexico Sweden and South Africa were represented at the '54 Wakefield and FAI contests. Conspicuous absentees among those originally invited were the USSR and four communist satellite countries.

One of the keynotes of this year's meet was the painstaking care shown by the 15 American proxy fliers and the high placings gained by their competent handling of the entries sent over by countries unable to finance their teams' traveling expenses to the U.S.A. Question: Where will these events be held next year? END

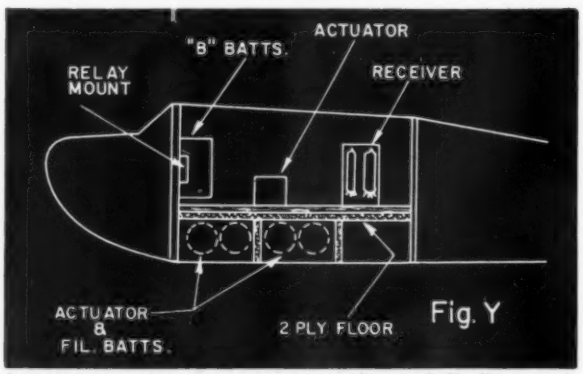


Drawing no current control position, self-neutralizing escapement by Herman Rau, New York, has low resistance coils for positive action.

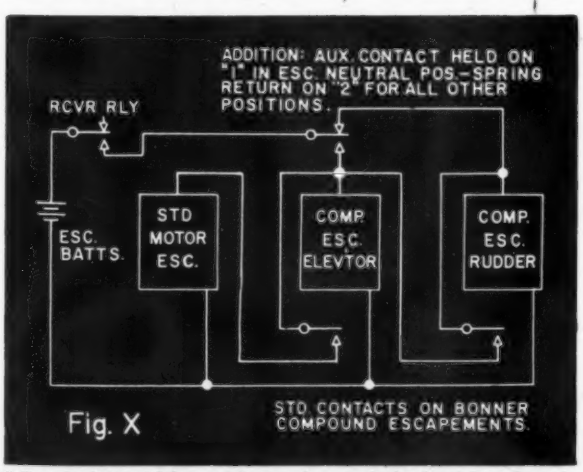
Radio Control News

By E. J. LORENZ

Worthwhile tips, and things to try, before the '54 season bows out. Technical topics, new items. News, developments, suggestions are welcome.



Suggested arrangement equipment for crash survival. Ply floor greatly strengthens cabin section. Radio need not be damaged when plane hits.



Fully selective multiple-control operation on single-channel receiver obtainable here on modified compound escapement. C. Morency, Montreal.

An interesting German RC design, photographed by Ian McIntosh, Scotland. Note the unique method of attaching the wing hold-down rubber bands.

From the rear, the same job appears to have generous dihedral and stabilizer area. "Ailerons" may be fixed sections to achieve negative tips.

▸ Herman Rau of New York City sends in a new idea, shown in Fig. W. This is an escapement which offers the big advantage of drawing *no* current when in position, and is also self-neutralizing. In other words, current is used *only* when going from one escapement arm position to another. Both the normally open and normally closed points of the receiver relay are used. The contacts at A and B can be spring brass wiping contacts or the contact may be made through the escapement arm and each individual pawl. The coils may be of low resistance, about 2-3 ohms, to obtain more positive action. The current drain, on 3 volts, will then run to 1-1/2 amps but will be only momentary.

While on the subject of escapements, Fig. X gives a circuit by C. G. Morency, 4651 Park Ave., Montreal, P.Q., Canada. These layouts give multiple-control operation which is fully selective with but a single-channel receiver, and using standard escapements. By pulsing one, two, three, four or five times you can obtain right rudder, left rudder, down-elevator, up-elevator and motor speed change or cut-off, respectively. As noted, the only additional part consists of a set of contacts (SPDT) on one of the compound escapements. Some time ago we mentioned that more work should be done on the actuator end of RC work. This, along with all of the other escapement "gadgets" we've shown, is a good step forward. Looks like the Bonner compound can be used for just about everything.

Readers have written in concerned about the difference between *sensitivity* and *selectivity*. *Sensitivity* is a measure of the ability of a receiver to detect a signal to which it has been tuned. This means that one receiver with greater sensitivity can detect an incoming, weak signal and put the received energy to more efficient use than a receiver with less sensitivity. This is a function of the type of tube used and the design of the tank circuit and (*Continued on page 41*)

The 1954 Wakefield Winner

Judging by the before-and-after expressions, here and below, it is easy to tell which picture was made after the contest had been won. King was Australian National Champion for the past three years.

by ALAN KING with BILL DEAN

With five perfect flights, the Australian National Champion beat out the world's best for the coveted Wakefield Trophy. His ship, all agree, is the prettiest winner yet. The plans are quarter scale.

Man with a mission, King came the farthest of all, but his name led all the rest. Hermes, who had first-round 146 with British job, close second.

WAY back in 1928, long before Carl Goldberg had designed his first 'pylon' or the wonder boy from Portland had dreamed up U-control, two apparently unconnected events in modeling history took place. The first was the introduction of the Wakefield, which quickly became the World's premier international model plane contest. The other was the birth of a son to Mr. and Mrs. King, of Melbourne, Australia. Twenty six years later, this same Australian youngster was destined to become the winner of the famed Wakefield rubber trophy — at the '54 contest held in the USA.

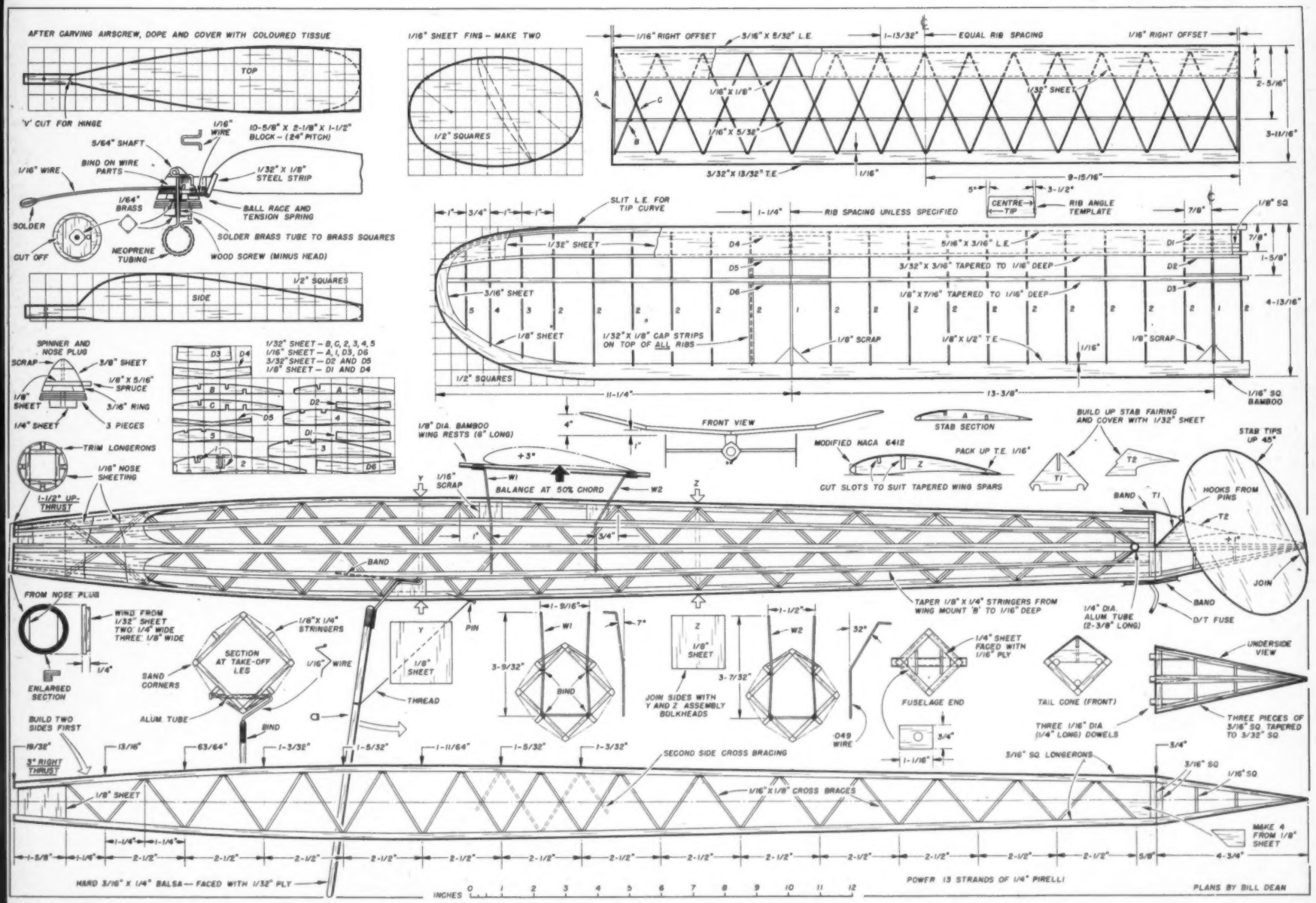
After Joe Foster won the Blue Riband trophy at the Cranfield contest in Britain last year, Alan — who was then working as an industrial chemist in Melbourne — decided that he would definitely make the trip over to the States for the next Championships, either in the role of contestant or spectator. When the Aussie team-picking trials came round, he topped the list, but lack of official funds to send any team members over meant that he still had to paddle his own canoe — or rather slap down something like 400 bucks for a round-trip sea passage!

The five maximums (180 second) which the wandering Australian boy chalked up at this year's Wakefield were the culmination of years of contest flying experience, which have placed him in the forefront of his country's modeling activities. To be more specific, he was the Aussie National Champ in '51, '52, '53 and he achieved the distinction in the last contest of taking firsts in Wakefield, A.2 Glider, F/F Power, C/L Cargo, and a second in Indoor Stick.

The prettiest model ever to win the Wakefield, this sleek twin-finned octagonal-fuselage design impressed everyone at this year's contest, with its safe, smooth flying characteristics. Ticking off the salient features of the Australian winner, we see that a 20 x 24 in. single-bladed folder is used; the take-off leg retracts; the geodetic stabilizer tips up 45 degrees! the polyhedral wing is parasol mounted and both flying surfaces have sheeted leading edges.

The wing is set well back (trailing edge behind the midpoint of fuselage), balance is at 50% chord, and the nose plug is packed to give 3 degrees right and 1-1/2 degrees up thrust (yes, we said up thrust!). Main specifications are 8.3 ounces (2.82 of total is rubber, 219 sq. in. wing (NACA 6412 with more undercamber), 74 sq. in. stab (thinned Clark Y), span 48 in., length 42-1/2 in., aspect ratio of 10:1.

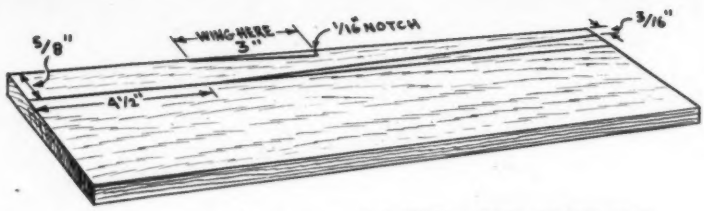
The fully dimensioned (1/4 scale) plans on the facing page have been prepared from the (*Continued on page* 50)


AFTER CARVING AIRSCREW, DOPE AND COVER WITH COLOURED TISSUE
TOP
'V' CUT FOR HINGE
1/16" WIRE
10-5/8" X 2-1/8" X 1-1/2" BLOCK – (24" PITCH)
5/64" SHAFT
BIND ON WIRE PARTS
1/16" WIRE
1/32" X 1/8" STEEL STRIP
1/64" BRASS
BALL RACE AND TENSION SPRING
SOLDER
SOLDER BRASS TUBE TO BRASS SQUARES
CUT OFF
NEOPRENE TUBING
WOOD SCREW (MINUS HEAD)
1/2" SQUARES
SIDE
1/16" SHEET FINS – MAKE TWO
1/2" SQUARES
1/16" RIGHT OFFSET
3/16" X 5/32" L.E.
1-13/32"
EQUAL RIB SPACING
1/16" RIGHT OFFSET
1/16" X 1/8"
1/32" SHEET
1/16" X 5/32"
2-5/16"
3-11/16"
3/32" X 13/32" T.E.
1/16"
9-15/16"
5"
3-1/2"
CENTRE → TIP
RIB ANGLE TEMPLATE
SLIT L.E. FOR TIP CURVE
1-1/4"
RIB SPACING UNLESS SPECIFIED
7/8"
1/8" SQ
1/32" SHEET
D4
5/16" X 3/16" L.E.
D1
D5
3/32" X 3/16" TAPERED TO 1/16" DEEP
D6
1/8" X 7/16" TAPERED TO 1/16" DEEP
D3
3/16" SHEET
1/8" SHEET
1/32" X 1/8" CAP STRIPS ON TOP OF ALL RIBS
1/8" SCRAP
1/8" X 1/2" T.E.
1/16"
1/8" SCRAP
1/2" SQUARES
11-1/4"
13-3/8"
1/16" SQ BAMBOO
4-13/16"
1-5/8"
SPINNER AND NOSE PLUG
SCRAP
3/8" SHEET
1/8" X 5/16" SPRUCE
1/8" SHEET
3/16" RING
1/4" SHEET
3 PIECES
1/32" SHEET – B, G, 2, 3, 4, 5
1/16" SHEET – A, I, D3, D6
3/32" SHEET – D2 AND D5
1/8" SHEET – D1 AND D4
D3
D4
D2
D5
D1
D6
TRIM LONGERONS
1/16" NOSE SHEETING
1-1/2" UP-THRUST
1/8" DIA. BAMBOO WING RESTS (6" LONG)
4"
FRONT VIEW
STAB SECTION
BUILD UP STAB FAIRING AND COVER WITH 1/32" SHEET
STAB TIPS UP 45°
MODIFIED NACA 6412
PACK UP T.E. 1/16"
+3°
W1
BALANCE AT 50% CHORD
W2
1/16" SCRAP
CUT SLOTS TO SUIT TAPERED WING SPARS
T1
T2
BAND
HOOKS FROM PINS
JOIN
BAND
D/T FUSE
TAPER 1/8" X 1/4" STRINGERS FROM WING MOUNT 'B' TO 1/16" DEEP
1/4" DIA. ALUM TUBE (2-3/8" LONG)
FROM NOSE PLUG
WIND FROM 1/32" SHEET TWO 1/4" WIDE THREE 1/8" WIDE
1/4"
ENLARGED SECTION
1/8" X 1/4" STRINGERS
SECTION AT TAKE-OFF LEG
1/16" WIRE
BAND CORNERS
ALUM. TUBE
BIND
THREAD
PIN
1/8" SHEET
1-9/16"
7"
3-9/32"
BIND
JOIN SIDES WITH Y AND Z ASSEMBLY BULKHEADS
1/8" SHEET
1-1/2"
3-7/32"
32°
.049 WIRE
1/4" SHEET FACED WITH 1/16" PLY
FUSELAGE END
3/4"
1-1/16"
TAIL CONE (FRONT)
THREE 1/16" DIA (1/4" LONG) DOWELS
UNDERSIDE VIEW
THREE PIECES OF 3/16" SQ TAPERED TO 3/32" SQ
BUILD TWO SIDES FIRST
19/32"
3° RIGHT THRUST
13/16"
63/64"
1-3/32"
1-5/32"
1-11/64"
1-5/32"
1-3/32"
SECOND SIDE CROSS BRACING
3/4"
3/16" SQ LONGERONS
3/16" SQ
1/16" SQ
1/8" SHEET
1/16" X 1/8" CROSS BRACES
MAKE 4 FROM 1/8" SHEET
1-5/8"
1-1/4"
1-1/4"
2-1/2"
5/8"
4-3/4"
HARD 3/16" X 1/4" BALSA — FACED WITH 1/32" PLY
POWER 13 STRANDS OF 1/4" PIRELLI
INCHES 0 1 2 3 4 5 6 7 8 9 10 11 12
PLANS BY BILL DEAN

1 ALWAYS MEASURE ACCURATELY!

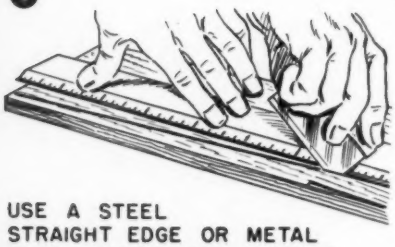
USE A GOOD, STRAIGHT, RULER.

2



LAYOUT FOR FUSELAGE.
DRAW ON 3/16" THICK, MEDIUM SHEET BALSA.

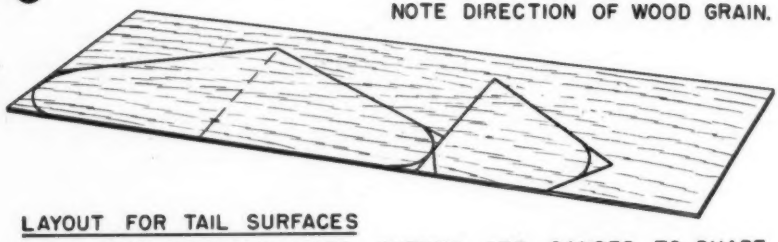
3



USE A STEEL STRAIGHT EDGE OR METAL EDGED RULER FOR CUTTING STRAIGHT LINES.

4

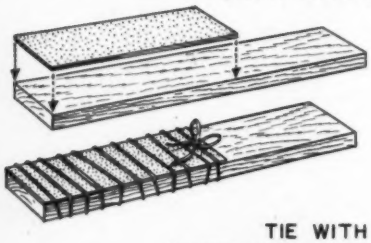
NOTE DIRECTION OF WOOD GRAIN.



LAYOUT FOR TAIL SURFACES
CUT ALONG STRAIGHT LINES. CURVES ARE SANDED TO SHAPE.

5

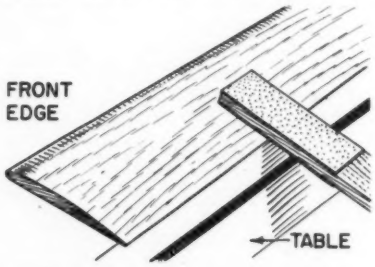
CEMENT SANDPAPER TO STICKS (BOTH SIDES)



TIE WITH STRING UNTIL DRY.

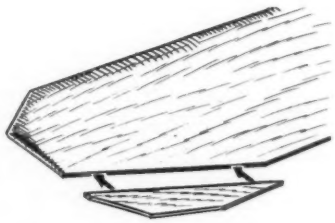
6

SAND WING TO AIRFOIL SHAPE.



PLACE NEAR TABLE EDGE.

7



CEMENT 1/32" SHEET AILERONS TO WING.

The Zoomer

By CHUCK TRACY & JIM POWELL

▼

Intended for MAN's many younger subscribers, this simple glider is a good start toward making all kinds of models, even when the drawings are not full size.

▶ To learn the art of building and flying model airplanes, let's start at the beginning with this easy-to-make, sheet-wood glider. We'll call it the "Zoomer."

It will teach you theories of flight that may be used on all future planes you build. This is the model which seven-year-old Dan Tracy flew to win a first place in the Dodo age division (nine and younger) of an indoor meet in Cleveland last winter. His best flight indoors was 15 seconds.

Future articles in this series for beginners will show you how to make and fly all kinds of models, from feather-weight indoor jobs to a final lesson on becoming a real "hot pilot" of a simple controlline gas model. It'll be fun and you'll learn the facts of a great hobby.

Balsa Wood Needed for the First Project—The Zoomer

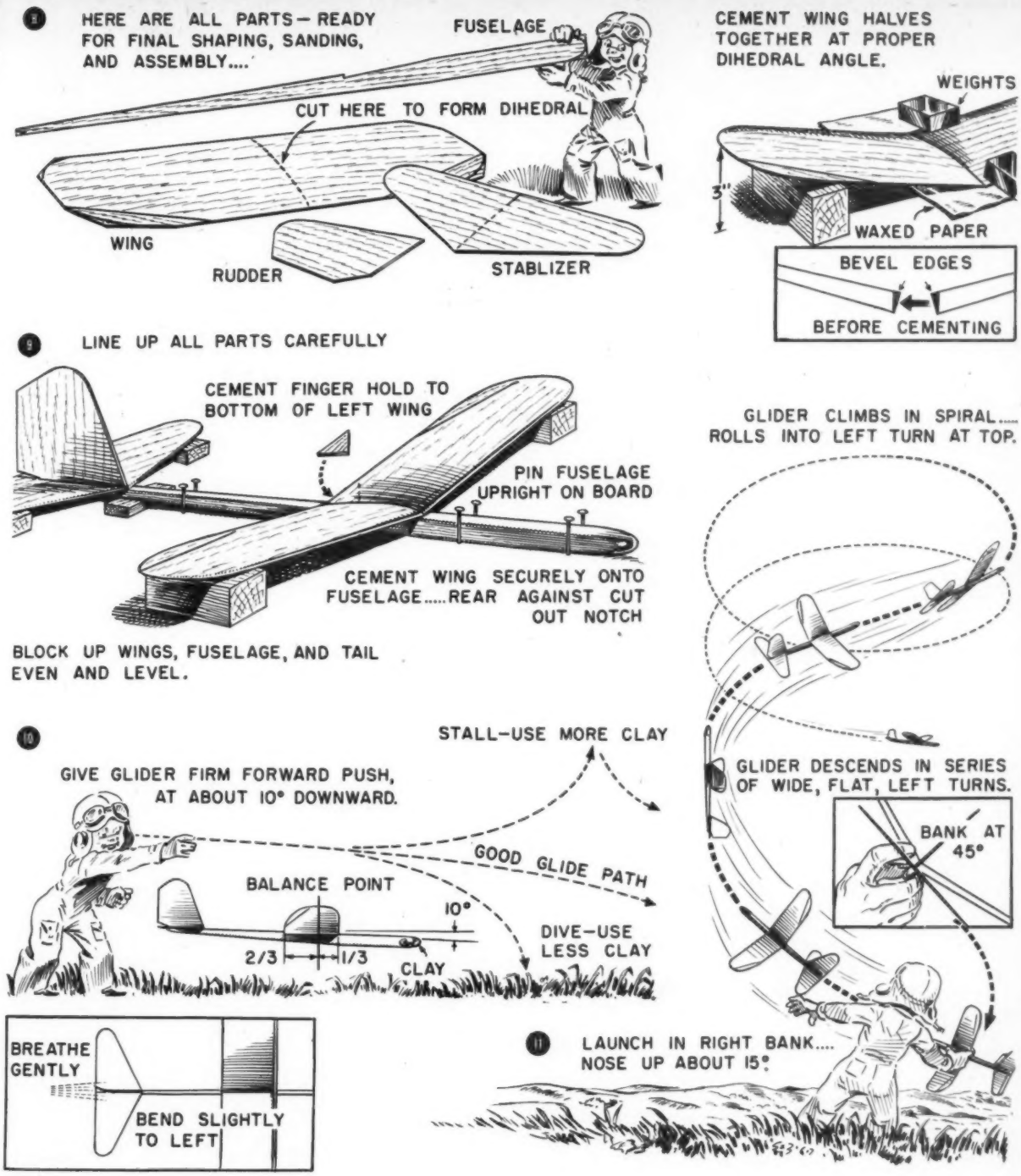
Wing—one piece, 1/8 x 3 x 12 in. soft; Fuselage—one piece, 3/16 x 5/8 x 14 in. medium; Tails—one piece, 1/32 x 2-1/2 x 10 in. soft. Cement and modeling clay.

Tools Needed

Single-edge razor blade; Sandpaper—coarse and fine; Metal-edged ruler or straight-edge; Fingernail emery boards; Sticks about 1/8 in. thick, 1 in. wide, 4 in. long to make sanding sticks (Fig. 5).

In model plane building, accurate measurements are very important. On the Zoomer, the most important measurement is the 1/16 in. notch cut in the fuselage or body to give the wing its "angle of incidence" which is the angle at which a wing or tail surface is attached to the fuselage to give proper air flow for balance and stability.

How to Measure: Each inch on a ruler is divided into sixteenths (1/16's). These are shown by the shortest lines of the scale. Two-sixteenths make one-eighth (1/8 in.) inch, shown by the next



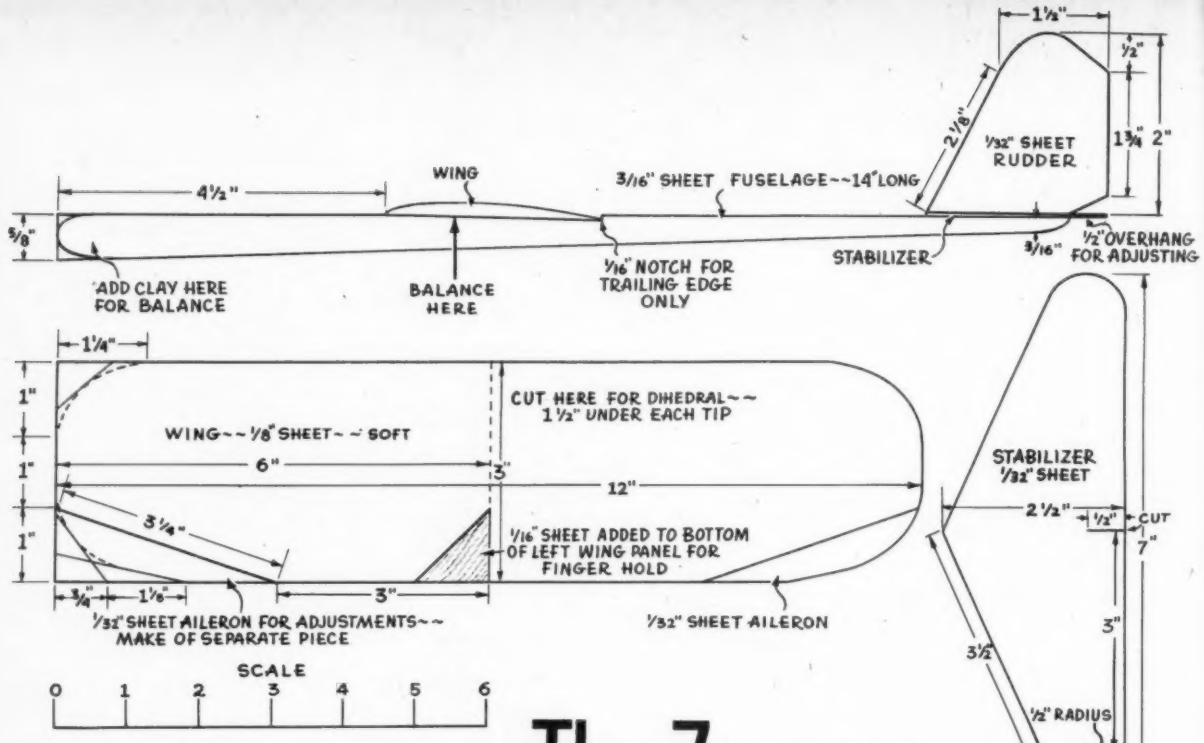
smallest lines. (Little "quote" marks behind a number mean inches. One 'quote' mark means feet.) Two-eighths of an inch make one-fourth (1/4 in.) and two-fourths are one-half, (1/2 in.). Reading from the end of your ruler to the 1 in. mark here are some of the measurements you will find in making the glider: one-sixteenth (1/16 in.); one-eighth (1/8 in.); one-fourth (1/4 in.); one-half (1/2 in.) and five-eighths (5/8 in.).

Fuselage: Using measurements on plan (Fig. 2) draw fuselage on 3/16 in. thick balsa with soft pencil and ruler. Note top line is straight so use edge of wood for this side. Bottom of fuselage slants upward toward tail end.

Cut out fuselage with razor blade guided by ruler (Fig. 3). Press firmly on ruler to keep wood from slipping. *Keep fingers clear.* Don't try to cut curves. Trim body out with straight cuts. Curves are sanded in later. A jig or coping saw would be handy to use here since wood thicker than 1/8 in. is hard to cut with razor blade and ruler.

Draw tail surfaces on 1/32 in. sheet wood (1/32 in. is half of 1/16 in.). Use ruler and razor blade to trim out the rudder and stabilizer with straight cuts (Fig. 4). Be sure rudder has wood grain running as shown. Draw a line marking center of stabilizer. Rudder will be cemented here later.

Airfoils are the shapes of wings when viewed from the end or tip. In bigger



The Zoomer

models wing ribs form the airfoil. In this glider you shape the airfoil by sanding the upper surface to the curve shown with a rounded leading edge and a thin, sharp trailing edge. This gives better lift and less drag as the wing slices through the air.

Sand airfoil shape to the 12 in. piece of 1/8 in. sheet wood that is 3 in. wide before you trim it to the wing outline. This will keep you from making two halves of the wing for the same side. Use coarse sandpaper first, then medium and fine. The bottom is flat, but sand over it lightly with fine sandpaper. Note that the thickest point of the wing is about one-third of its width (chord) from the front (leading edge).

With airfoil formed, measure and mark center of wing and corners to be sliced off (shaded areas on drawing). Trim off corners, using razor guided by ruler, and cut wing in center. Now sandpaper the top surface to thin the wing's edges where you cut off the corners. Gently round the front corner but thin the trailing edge to a thickness of 1/32 in. so the ailerons may be attached.

Ailerons at wing tips are for easy adjustments to make the glider turn and bank. Cut them from 1/32 in. sheet wood, same material used for tails. Cement in place on wing.

Sanding sticks are used to shape outline of all curved parts: nose and rear or fuselage, tips of rudder and stabilizer, front tip of wing and ailerons and butt ends of wings for center joint.

Assembly: To make a good joint for the wing panels, sand a slight slant from upper to lower surface. Weight or pin one panel to board. Use wax paper to prevent its sticking to board or table. Pin fuselage to board. Cement tail in place. Note that 1/2 in. of trailing edge extends over fuselage to allow warping adjustments to be easily made.

Cement wing into notch in fuselage. Don't spare the cement. Cut a triangle of 1/16 in. sheet wood and cement it to bottom of the left wing panel as a finger hold for launching.

Test Glide: Launch gently with nose aimed slightly down. (Fig. 10) About 10° downgrade is right. Balance model by adding modeling clay to nose. Balance point is one-third of wing chord (width) from leading edge. Add or remove clay to get smooth test glide. Model should glide smoothly and flatly from hand in a long glide when perfectly adjusted.

For best flights, set rudder by breathing gently on it as you bend it slightly to left (left is your left if you're sitting in cockpit of plane). Now put index finger on trailing edge finger rest, hold model tilted in 45° right bank, nose slightly up (about 15°) and launch with side-arm whipping motion (Fig. 11). Do this over high grass area.

Grass will save your model from damage until you learn to throw it well. This kind of launch gives your model a spiral climb with it rolling out into a left turn at the top of the spiral when your throwing force has been spent. It should glide down in a wide flat left turn.

By holding the ailerons and elevators of the model close to your mouth and breathing on the thin wood as you bend it, you can adjust these control surfaces for other maneuvers. An aileron warped up makes that wing tip go down and vice versa. You'll be surprised how much effect 1/16 in. warp in the ailerons, rudder or elevator has on the flight of this model. Elevators warped *down* at the trailing edge make the tail go up, the nose down. Warping elevators *up* makes the model climb. This adjustment may be used as a refinement of adding or taking away modeling clay on the nose, but some clay for normal balance is required.

From all this you'll learn that all surfaces of a flying model must be true and just right or your plane will not fly as you want it to. Practice the side-arm launch, as it's the best known way to get really long flights from a glider. Best of luck! END

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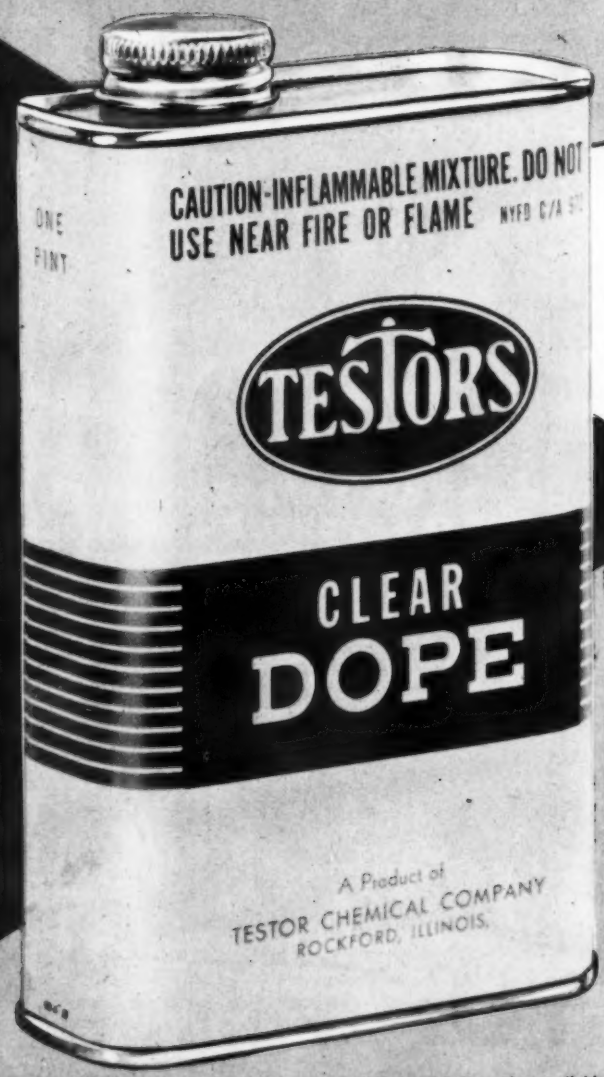

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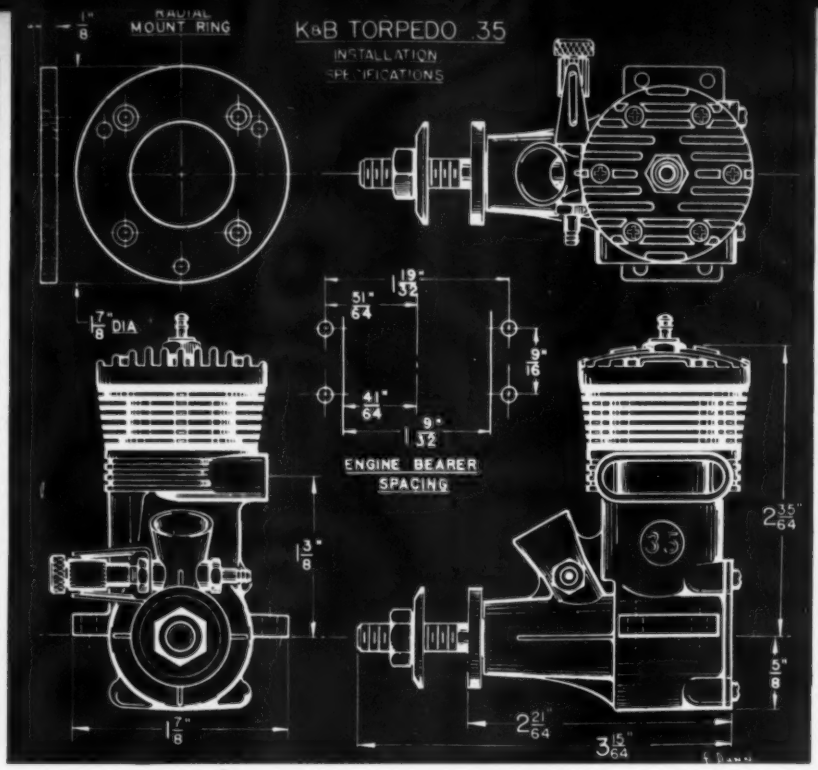


Engine Review

K&B .35

by E. C. MARTIN

Not a scaled up .19, or even a .29, this .35 is a brand new design that makes its own contribution to engine progress.

When the record breaking .19 made its appearance three years ago, it was apparent that the stage was set for a whole range of engines to the same outstanding formula. However, had the firm followed such a program to the letter, these tests might have become simply a matter of multiplication. Developments in the engine business move fast and a three-year-old design is definitely aging when you consider the developments we have seen in that time.

As in the case of the .15 there is no magic revolutionary principle embodied in the new .35 with which to explain its performance. There is, in fact, not one single feature one can say is "it." Like any outstanding modern engine, the machine itself is "it"; in short, a balanced design, refined to the last detail, around the same old piston and cylinder. Let us look at the latest crop of little "its" in this new "Torp," and see what apparently insignificant factors contribute to horsepower.

Basic construction is identical with the smaller Torps, and similarly in the case of materials, except that, unlike certain models, the .35 uses a drop forged conrod.

The crankshaft, machined from bar stock, has a 7/16 in. main diameter with tapered drive, crescent type counterweight, and a 5/16 in. dia. gas passage. The rectangular valve port is produced by milling across the shaft, and followed up with what appears to be a broaching operation to remove the sharp internal edges and take full advantage of the opening area. A few dozen revs are attributable there, while two or three more arise from a minute lubrication groove which encircles the shaft at the forward edge of the valve port. This oilway is too small to cause any material crankcase leakage, but is large enough to convey a trace of oil under crankcase pressure. Its location is at a point where shaft stress is not critical, and does not therefore affect strength.

A standard 1/4 threaded portion mounts sturdy steel drive (*Continued on page* 39)

NEWS F-L-A-S-H-E-S

direct from the 1954 NATIONALS . . .

MORE NATIONALS CHAMPS WON with TOP FLITES and POWER PROPS THAN THE 4 OTHER MAKES COMBINED!

HERE'S WHAT THE CHAMPS USED TO WIN!

Here's a real flyer—BOB CHERNY of Sacramento won 2 BIG FIRSTS. Above, Bob shows his Cl. B Senior winning WHOZEE, powered by a K & B 23 . . . time 16:36.8 . . . fuel, Ohlsson Gold Seal ½A. PROP . . . 9-4 TOP FLITE! See his other 1st below.

Young ROD PHARIS really showed 'em a beauty with his original JUPITER. Bagging 346.5 pts. in Junior Stunt, he fueled his Fox 35 with Power Mist and swung a 10-5 TOP FLITE PROP. Detroit and TOP FLITE are mighty proud of Rod.

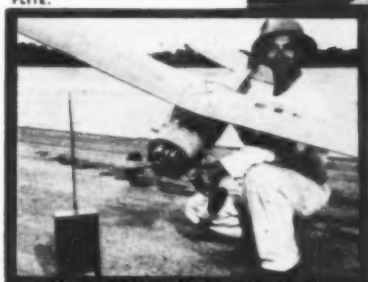
Happily winning the helicopter event for the 2nd straight year is "PAR" SCHOENKY of Kirkwood, Missouri. Cheminal AA was the bang-water for his Atwood .049 and O. K. .14 engines . . . and he really got nifty lifts with his 6-3 and 9-4 TOP FLITE PROPS. That's Carl Goldberg of TOP FLITE on the left.

Detroit comes thru again with ED STOLL, who repeated his 1953 win in Cl. ½A Scale Open. This year, Ed amassed 344.5 pts. with his beautiful flying Fairchild. His engine was a Wasp . . . fuel, Cheminol AA . . . PROP, 6-3 TOP FLITE.

SPECIAL FLASH!

International FAI Gas Winner and World Champion Uses Top Flite Prop!

Here he is—CARL R. WHEELEY of Washington, D. C. In the world's most grueling gas model competition, held on Long Island, July, 1954, Carl beat the best from many nations with his Senator, smashing home with 844 sec. Engine, Torp 15. Fuel, K & B 1000. PROP—and we're really proud of this one—an 8-3½ TOP FLITE!



In 1952, ALEX SCHNEIDER of San Francisco won Radio Control with his 5-Channel Rockwood Set and original Piper Cub. This year Alex dominated the field again with 183 pts. Engine, Spitfire 60. Fuel, gas and oil. PROP, 14-6 TOP FLITE.

FREE FLIGHT GAS

Cl. ⅛A Junior
Darryl Katz
Detroit, Mich.
Time 15:14
Engine Atwood .049
PROP 6-3 POWER PROP
Fuel Thimble Drome Racing
Plane Fuber 36

Cl. ⅛A Open
Gabriel Martinez
New Orleans, La.
Time 17:43.3
Engine Atwood .049
PROP 8½-4 POWER PROP
Fuel O & R #2
Plane Modified Kiwi

Cl. ½A Scale Junior
Jim Watson
Fort Des Moines, Iowa
Engine Wasp
PROP 6-3 TOP FLITE
Fuel Thimble Drome
Plane F. W. Stosser

Cl. ½A Scale Senior
Paul Crowley
Detroit, Michigan
354 pts.
Engine Wasp
PROP 6-3 TOP FLITE
Fuel O & R AA
Plane Aeronca

Cl. A Senior
Robert Galvin
Topeka, Kansas
Engine K & B Torp 19
PROP 10-3-½ TOP FLITE
Fuel K & B 1000
Plane Spacer

Cl. B Junior
David Brownlee
Stone Mountain, Ga.
Time 10:31
Engine K & B 23
PROP 9-4 TOP FLITE
Fuel Home Brew
Plane Spacer

Cl. B Open
Earl Anderson
South Bend, Ind.
Time 17:52.2
Engine O & R 23
PROP 9-6 TOP FLITE
Fuel Nitro-X
Plane Gaffy 1

Cl. C Senior
Don Helfers
Arlington Heights, Ill.
Time 16:54
Engine Torp 32
PROP 10-6 TOP FLITE
Fuel O & R AA

Raw Senior
Robert Cherny
Sacramento, Calif.
Time 13:33
Engine K & B 15
PROP 8-4 TOP FLITE
Fuel Ohlsson Gold Seal ⅛A
Plane Lancer

Raw Open
Sherman Hackenberg
El Paso, Texas
Time 16:50
Engine K & B 15
PROP 8-3-½ TOP FLITE
Fuel K & B 1000
Plane Original—My Sin

CONTROL LINE

Stunt Open
Don Still
Beaumont, Texas
349.8 pts.
Engine Fox 29
PROP 9-6 TOP FLITE
Fuel O & R Hellzfyre
Plane Stuka

Combat Junior
Bill Trevison
Detroit, Michigan
540 pts.
Engine Fox 35
PROP 10-6 POWER PROP
Fuel Power Mist
Plane Original

Combat Open
Frank Adams
New Albany, Ind.
Engine K & B 35
PROP 10-6 POWER PROP
Fuel K & B 1000

Flying Scale Junior
Jose Pinero
Hato Rey, Puerto Rico
183 pts.
Engine Cameron 19
PROP 8-6 POWER PROP
Fuel K & B 1000
Plane Cessna Bird Dog

Flying Scale Senior
J. McCrosky
Iredell, Texas
311 pts.
Engine K & B 32
PROP 9-6 TOP FLITE
Fuel Power Mist
Plane F-51

Flying Scale Open
Robert Yeomans
West Haven, Conn.
329 pts.
Engine Two K & B 29's
PROP 9-6 POWER PROP
Fuel Hellzfyre
Plane P2V2 Neptune

Speed Class ⅛A Junior
Martin Maciag, Jr.
Matawan, N. J.
Time 72.43 MPH
Engine Thermal Hopper
PROP 4-½-7 POWER PROP
Fuel Hellzfyre

U. S. Navy Carrier Senior
Dave Damisi
Rocky River, Ohio
417 pts.
Engine Fox 35
PROP 9-7 TOP FLITE
Fuel Cheminol XL-2
Plane Grumman AF2-S Guardian

PAA LOAD

Cl. ⅛A Jr.-Sr.
Joe E. Ziomek
Allen Park, Mich.
Time 13:25
Engine Space Bug
PROP 6-3 TOP FLITE
Fuel Nitro-X
Plane Original

Cl. ⅛A Open
Joseph Ziomek
Allen Park, Mich.
Time 14:55.2
Engine Space Bug
PROP 6-3 TOP FLITE
Fuel Nitro-X
Plane Original

Cl. AB Open
Bruno Markiewicz
Detroit, Mich.
Time 13:58.4
Engine Torp 19
PROP 9-4 TOP FLITE
Fuel Nitro-X

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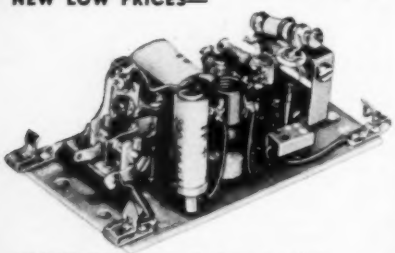


P. G. F. CHINN

FOREIGN NOTES

A monthly world-wide round-up of technical developments, designs, significant industrial products.

by P. G. F. CHINN

Increasing Popularity of Free Flight Scale

In Britain, over the past year or two, there has been a marked increase in the popularity of free flight gas-powered scale models. The concours d'elegance events at most of the big annual contests have always attracted flying scale jobs, but some of these were more "scale" than "flying" and the prize would often have to go to the solitary model (probably patched and battered) which could stagger through a qualifying flight. Of late, however, (encouraged by a number of good scale kit designs) free flight enthusiasts have been turning out some airworthy scale jobs that are a real delight to watch in flight.

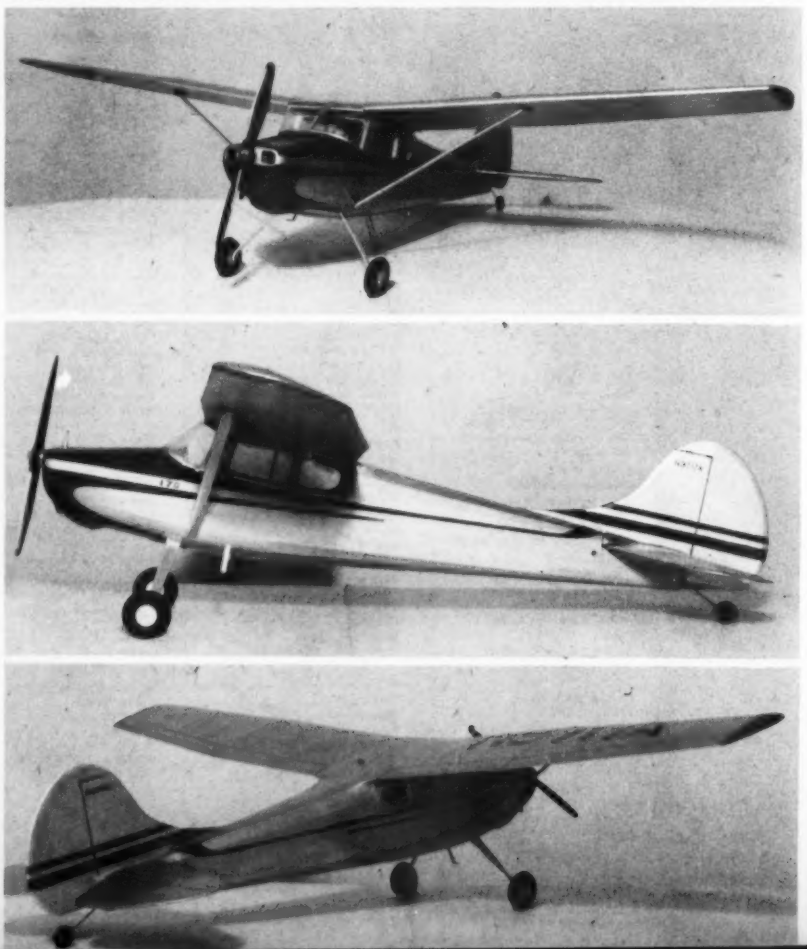
These range from Half-A jobs (generally intended for use with the 1/2 c.c. [.03 cu in.] class Diesels) through popular 4-5 ft. jobs for .09-.15 cu. in. motors, to a few quite large jobs (often RC) using motors up to .60 cu. in. displacement. There are now one or two endurance contests for scale FF, but the main contest interest still centers on concours. The one complaint voiced by scale FF fans is against the habit of some contest organizers of lumping FF and controlline scale together and, as the FF men say, this weighs heavily in the controlliner's favor, as it can carry far more detail and can "qualify" under flying conditions that would ground the most successful FF scale job.

Reed Valves for Australian TR

In Australia, team racing (the Aussies call it team-speed) is popular. Their rules closely follow the original FAST rules—not the British variations thereon—but they also have a Class A category for motors up to .15 cu. in., which is flown on 52-1/2 ft. lines. Col. Somers, well-known Queensland modeler, has lately entered the fray with an E.D. 2.46 Diesel converted to reed-valve induction. Arthur Gorrie reports that the model is fast and economical. Most Class A team racers were getting around 22 laps on the regulation tankage. Somers gets speed plus 40 laps. In a recent competition, Somers shot miles ahead in the final, then broke a con-rod. Undaunted, he stripped the motor, fitted a replacement rod and finished second.

(*Continued on page* 33)

With Half A free flight scale on the upswing, this Cessna 170 is of interest. It is a Bill Dean design, modified by John Chinn, the author's brother. Allbon Diesel motor scales in quite neatly.



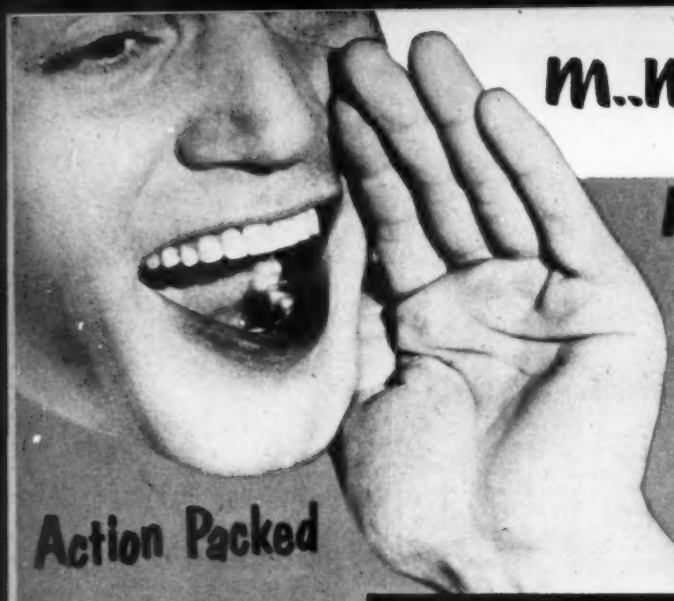
New Italian Supertigre Motors

The Supertigre motors, made by Micromeccanica Saturno of Bologna, Italy, are virtually the only motors now produced in quantity in Italy. As a result, Supertigre has the job of filling demand in all displacement classes. The two latest jobs from the drawing board of designer Sig. Garofali, therefore, are a .06 cu. in. and a .09 cu. in. model. These are now in production and are known, respectively, as Types G.25 and G.26. They will replace the earlier *Tipo* G.22 Baby-Tigre of .075 cu. in. These two motors are entirely new designs and are shaft-valve Diesels with a form of cylinder porting which combines features of both the normal radial port layout and the reverse-flow scavenged opposed exhaust-port system. A ball joint is used instead of a wrist-pin and, unlike many European Diesels, the shaft is counterbalanced. We were favorably impressed with the running of the new Tigres, particularly with the powerful high-speed performance of the smaller model.

British and American A.2's Still Lagging

The English-speaking countries were soundly trounced at the 1954 World Glider Championships, held at Odense, Denmark. Team placings among the 18 countries represented were Great Britain, seventh; Canada, eleventh; U.S.A., 15th. Contest was run under the new 5 x 3 min. flight rule and, as the Italians said, *in condizioni atmosferiche impossibili* . . . Rain and wind certainly did not suggest an easy passage for the "calm weather" models favored by some Continental competitors, but, despite this "English" climate, the best British placing was twelfth down, preceded by entries from Germany (who provided winner and second place man), Sweden, Italy, Saar, Finland, Switzerland and Yugoslavia. If any consolation is to be derived from the fact, we might mention that Denmark, which supplied last year's winner, placed

(*Continued on page 36*)



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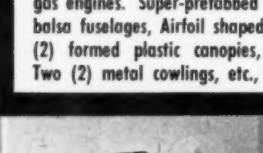

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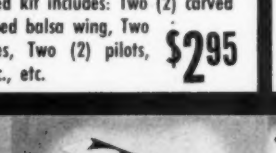

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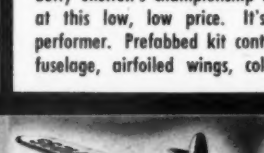

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LENGTH: 14" For .020 to .074 Eng. A "beaut" of a speedboat. Prefabbed model is 100% complete—carved balsa hull, brass fittings.

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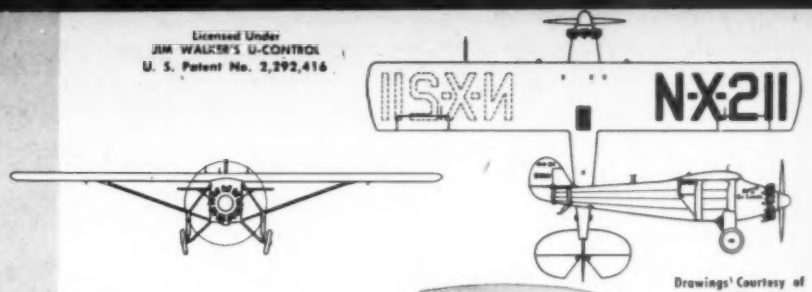

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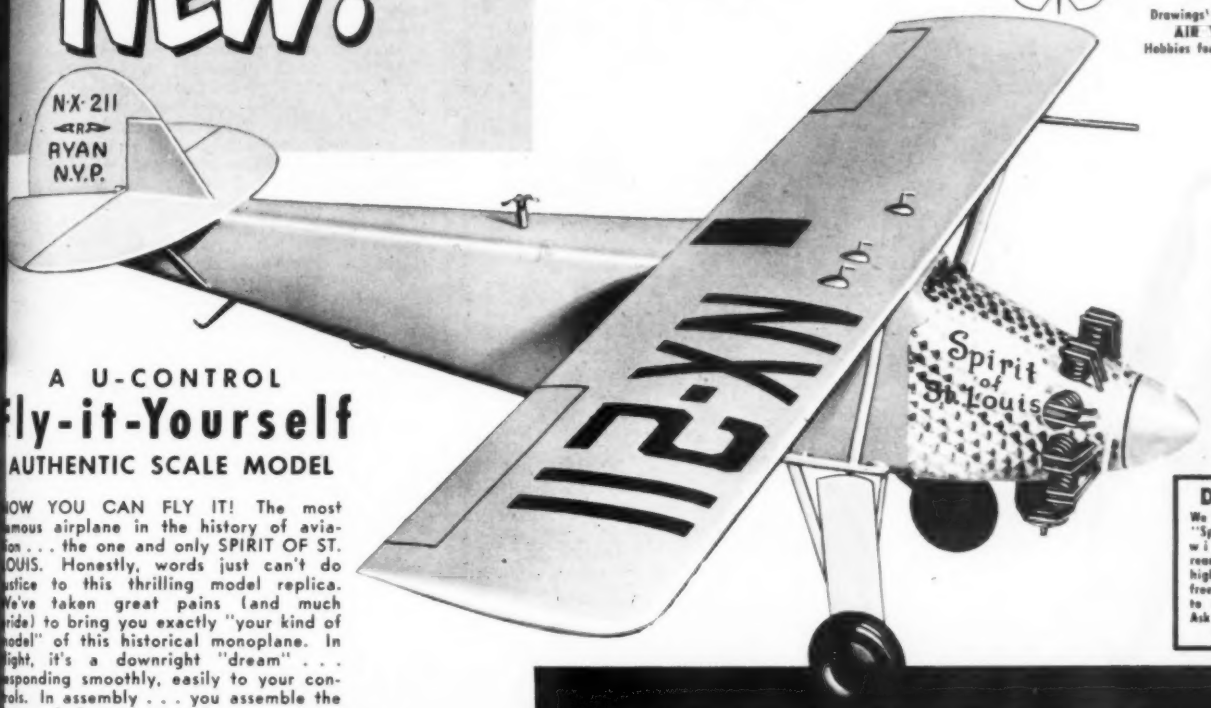

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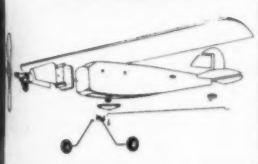
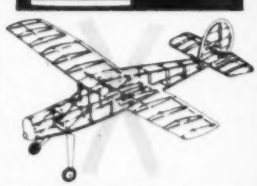


THIS

One Piece Airfoiled Balsa Wing, Carved Solid Fuselage, Formed Balsa Tail Assembly, Metal Cowl, Formed Landing Gear, Rubber Wheels with Bushings, Formed Metal Motor Mount, Plastic Spinner, Decals, All Hardware . . . etc., etc. All parts ready formed . . . completely prefabbed for super-easy assembly.

NOT this



NOT this

Old-fashioned flimsy construction. Tedious "stick framework" assembly requiring days and days of messy cutting, gluing, fitting, covering, etc., etc.

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sixth in the team placings, while Yugoslavia (1952) was sixteenth and Austria (1951) was twelfth. The general trend of A.2 design, as represented at Odense, was toward higher aspect ratios and slimmer fuselages.

A Japanese Half-A Motor

We have lately had the opportunity of trying a Japanese built Half-A motor: the Fuji .049 from Tokyo. While not as highly finished externally as the typical American Half-A, the Fuji is nevertheless a soundly made little job. It uses a machined steel conrod and the main bearing is bushed. An uncommon feature is that the entire cylinder, including head, is machined in one piece. The rest of the motor follows usual Half-A practice, being of the shaft rotary-valve type with two-point radial-mount die-cast crankcase. The "Sun" glow plug fitted is similar to the original Arden plug. The motor weighs 1-3/4 oz. and a special 6 x 3 Fuji prop, designed by the pioneer Japanese modeler, Dr. Hidemasa Kimura, is supplied for it.

Australian Compound Escapement

The Australian "Kontrol-Master" RC gear, designed by Gil Miles, includes a compound escapement of the Bonner type and one of our Australian friends recently sent one of these for our inspection.

The Miles escapement differs considerably from the Bonner in layout, but the principle of operation is much the same. Instead of the four-arm pawl, four pins are riveted onto the toothed wheel, three on one side and one on the other. They are arrested in the required sequence by the armature of the electro magnet which is placed immediately below the wheel. Thus, all the mechanism of the escapement is on one side of the panel only. The entire unit is mounted on a very rigid L-shaped plate of 1/16 in. aluminum. It is 2.4 in. high, 1.6 in. wide and scales 2 oz.

Austria's Bugl Motor

Austria has had no model aircraft engines of her own in actual production up to the present, but a new motor has lately appeared in Vienna which may fill this need.

The Bugl motor is, as we might expect, a Diesel, and is of the very popular 2.5 c.c. class: .15 cu. in. For a .15, it is a very short stroke design, the bore being .614 in. with a stroke of .512 in. The crankshaft is mounted in two SKF ball bearings and an unusual feature of the Bugl (but one which has received more attention since its highly successful appearance in the Cox Space-Bug and Thermal-Hopper engines) is the reed-valve intake system. In the Bugl, this is combined with a conventional needle-valve and rear intake carburetor and the reed itself is of .06 mm. hardened steel. The motor is for beam mounting and weighs just over 5 oz.

Big Fuss over Engine Testing

A contributor to one of the British modeling magazines has come up with the remarkable assertion that all engine horsepower figures have been 100 per cent overly-optimistic. Says that if anyone gets more than .05 hp/c.c. (i.e., .25 bhp for a .30 cu. in., or .5 for a .60 cu. in. displacement) he is "sadly in error." This infers that horsepower claims of Doolings and McCoys, and the like, are up to 200 per cent exaggerated. Strange thing is that all previous test results—and there are scores of different sources, in numerous countries, on both sides of the Atlantic and on both sides of the Iron Curtain — have been roughly in agreement. Although the "low" figures have been supported by one manufacturer (who, however, has also agreed, with equal vigor, with previous standards), all evidence points to the greater accuracy of established testing technique. We believe that, as time goes on, the magazine in question will achieve specific output figures more near to the accepted standards. Already, one of these engine tests has exceeded the set standard of .05 bhp/c.c. by no less than 64 per cent.

END

The Champ

(*Continued from page* 12)

out the recesses to the depth indicated with the point of a razor blade or knife.

Trace the outline of the firewall on a piece of 1/8 thick plywood and cut to shape. The firewall is then cemented to the front of the fuselage. At this point the landing gear should be made and installed. Each half of the gear is made from 1/32 thick 61S-T6 or 24S-T4 aluminum sheet. Don't, under any circumstances, use 2S or 52SO aluminum alloys! They just don't have what it takes for the beating a hot landing will give them. A liberal coating of cement should be put in the recesses and the gear bolted in place before the cement hardens. The screws should be trimmed off flush with the nuts so that the 1/16 in. sheet balsa pads may be cemented in place in the recesses over the gear, to smooth off the sides of the fuselage.

Fabricate the front portion of the cowl from two pieces of 3/8 sheet balsa and a balsa block 3/4 x 1-1/4 x 2. The outlines for each of these pieces may be traced from the plans and the parts assembled as shown in the cowling detail in the lower right hand corner of the plans. The two cheeks behind the firewall should be carved from soft balsa blocks measuring 3/4 x 1-1/2 x 3-1/4. These two blocks should not be hollowed out, since they serve as braces for the firewall.

Lightly cement the cowl assembly and cheeks to the firewall and sand the entire fuselage assembly, blending the cowl blocks in smoothly with the firewall and fuselage. Round off the top and bottom edges of the fuselage with a knife and sandpaper, except the top of the cabin, which should be left flat.

Cut the rudder and stab from 3/32 thick sheet balsa. Quarter-grained stock is preferred for these parts because of its warp-resistant qualities. In any event, whether or not quarter-grained stock is used, the anti-warp strips shown on the plans should be carefully fitted and securely cemented in place as shown. Sand these assemblies to remove all fuzz and roughness and round off the leading and trailing edges with the sanding block.

Assemble the stab to the fuselage by coating the slot in the rear of the fuselage with cement and slip the stab in place. The stab should fit the slot snugly but not tightly. If the fit seems excessively sloppy several slivers of balsa will add the strength needed here.

The rudder is next cemented in place as shown, making certain that it is alined on center by sighting along the fuselage. Any serious misalinement may be difficult to contend with during flight testing.

Bend the tailwheel wire to shape, press one end into the fuselage, cover it with a small piece of silk and coat the area with cement. The fuselage assembly should be given a final sanding at this point and then set aside.

The wing construction offers the utmost in simplicity of construction, yet provides efficiency and adequate strength. Carefully select two straight, warp-free sheets of 1/16 thick medium balsa. The wood for this job should be quite flexible in a direction parallel with the grain, since they have to be curved to form the upper camber of the airfoil. Sand the sheets lightly on each side and cement them together along one edge as shown on the plans and pin them down on bench.

While the cement is drying, trace a template for the wing ribs from the side view of the plans and cut out 10 ribs from 1/8 thick balsa. The ribs should be pinned together in a stack and sanded for uniformity.

Remove the sheets from the workbench and trim the length to 34 in. The width should then be trimmed down to 5-5/8 as indicated by the dotted line on the wing layout. Trace a cardboard template of the wing tip outline from the plans and shape the ends of the sheet accordingly. Mark off the location of each rib on the sheet.

The wing is assembled by cementing the center ribs in place first, and working out toward the tips, alternately cementing a rib in the left, and then the right, side. The sheet should be securely pinned to the ribs and the cement given sufficient time to set firmly.

To get the dihedral shown on the drawings, carefully cut the wing in half between the two center ribs. Block up the tips 2-1/2 in. and carefully sand off the face of each center rib until the ribs butt together smoothly with the tips blocked up. Coat each center rib with cement and join the halves, clamping them tightly until the cement sets. Next cut the dihedral braces from 3/32 sheet balsa and cement them in place on 1/8 square balsa blocks as shown in detail in the upper right hand corner. The dihedral break should be covered with a strip of silk or thin cotton cloth, and coated with cement.

Cut the wing rest from 3/16 sheet balsa and bevel the ends to conform to the wing dihedral. The ends should be coated with cement and the rest may be assembled by pinning it to the dihedral brace on the under side of the wing, after first placing a piece of waxed paper on the brace to prevent the cement from sticking to the wing.

The wing should be sanded smoothly on both sides and the leading and trailing edges slightly rounded off for a finished appearance.

While not necessary, the struts do add a nice finishing touch. Since the drawings supply it, we will not go into a detailed discussion of their construction. The little wire fittings and tubing sockets permit the struts to knock off in hard landings, saving them from extensive damage, and are well worth the extra effort required to make them.

The wing rest should be securely cemented in the notch on top of the cabin and the wing hold-down dowels cemented in place.

The original was finished by first giving the entire structure one coat of thinned clear dope, and one coat of sanding sealer, with light sanding after each coat. Two coats of thinned cream dope over everything, with a single coat of orange below the color line, are indicated on the drawings. Cabin windows were painted on with black dope and the control outlines ruled on with black ink.

Lastly, assemble the wheels to the gear. This was done to prevent them from becoming splattered with dope during the finishing operation.

The engine should be assembled to the firewall with small wood screws, with the center line of the shaft located as shown on the drawings. Any type of tank may be used, but for utmost simplicity, the eyedropper is hard to beat.

Check the fore and aft trim by supporting the ship with your fingertips at the front edge of the wing rest. Any serious unbalance should be corrected by adding clay to the nose or tail as required until the CG is where it belongs.

Carefully hand glide the model, adjusting any tendencies to dive or stall by again adding clay to the nose or tail as required until a flat, straight glide, with perhaps a very slight stall, is obtained.

Begin power flights by using engine runs of three to five seconds with nearly full power. The model should turn to the left under power and very slight amounts of left thrust may be added until this is accomplished. Some downthrust may be required to prevent looping.

As the power flight testing begins, carefully note the glide direction, and, if necessary, warp the rudder slightly to obtain a fairly large right glide turn.

Slowly and carefully adjusted, the Aeronca Champ is a beautiful flier and will offer ample reward for the work expended.

Bill of Materials

2 pcs. 3/8 x 3 x 36 sheet balsa; 1 pc. 3/32 x 3 x 36 sheet balsa; 2 pcs. 1/16 x 3 x 36 sheet balsa; 1 pc. 1/8 x 2 x 24 sheet balsa; 1 soft balsa block 3/4 x 1-1/4 x 2; 2 soft balsa blocks 3/4 x 1-1/2 x 3-1/4; 3 pcs. 1/8 x 1/4 x 36 balsa strip; 1 pc. 1/8 square balsa strip; 1 small pc. 1/8 plywood; 2 scraps 1/32 61S-T6 or 24S-T4 aluminum sheet; 1 pr. 1-3/4 dia. wheels; 1 5/8 dia. wheel; 1 pc. 1/64 dia. music wire; 1 pc. 1/8 O.D. aluminum tubing; silk or cloth scraps; 1 pkg. small wood screws; 1 pkg. No. 3-48 x 1 in. long machine screws and hex nuts. END

Engine Review

(*Continued from page* 30)

washers, while a 7/32 in. dia. hollow crankpin maintains control at the other end. With the exception of the bearing surfaces the shaft is blued all over against corrosion, and is therefore immune from the liveliest fuels.

The crankcase follows the series design except for a bypass passage enormous even by Torpedo standards, and the addition of the bearing oilways which work in conjunction with the shaft groove. These take the form of two broached channels running along the bushing to within 3/8 in. of the outer end, and radially located on either side just below the center line, and of such size that a fair amount of oil will be in constant movement as crankcase pressure fluctuates, with the shaft groove forming the pressure relief.

It has long been the custom on many engines to provide a step in the rear cover for piston clearance at bottom dead center, and the similar step in several of the new Torpedo series, including the .35, has boobytrapped many a less observant owner into trying incorrectly to reassemble his engine, and cursing its creators 'cause he couldn't. The bolt holes will not line up unless the step is on the side, where it serves to lead and increase the opening into the bypass passage. Apparently K & B have discovered the tenacity of convention, and on the .35 the word "TOP" is cast in the appropriate place.

A venturi reducer is fitted in the intake and located by the spraybar to give a choice of 1/4 or 3/8 intake diameter, according to whether bhp or flexibility is most desirable.

The feature which will perhaps astound most people is the use of only two hold-down screws for the cylinder, plus the fact that they are the same thread size as used on the .15. When these two screws are laid beside the conrod, which takes its stress in compression, one cannot help sympathizing with the screws. Obviously, K & B have good grounds for being happy with the arrangement, and will smile tolerantly at our astonishment. However, go easy with those threads and do not tighten them more than absolutely necessary. Operating tension is added to initial screwdriver tension.

A 3/16 in. dia. tubular wrist pin with aluminum end pads connects the rugged forged aluminum rod to the piston via a very wide rod bearing. The piston, machined from Meehanite stock, is bored and milled out inside to reduce weight to the minimum, leaving a skirt thickness of .025 in. Wrist pin center is 1/16 in. above the mid-point and skirt length slightly exceeds the stroke at 3/4 in., the lower 7/16 in. being relieved. A filleted straight baffle is used of similar shape to the smaller sizes, and the fitted portion is an excellent fit in the upper part of the bore, as it is in the .15, and for the same reason.

The cylinder follows the same general design, having extremely large ports with radiused ends, and a parallel bore down to a point just below the ports, where it opens out in a slight taper. The flange which sits on the crankcase is fairly thick to preserve flatness since there are but the two hold-down bolts, and a neoprene, or similar, impregnated gasket is used top and bottom. The top gasket differs from the other models in that, instead of covering the entire joint area, it takes the form of a washer having an inside diameter equal to the bore and an OD just inside the bolt circle.

The head is typical with six screws, center plug and green enamel finish. A K & B standard short reach plug is fitted, although sufficient thread is available for long reach.

A good comparison for pointing up the improvements in this engine is afforded by the fairly recent and slightly smaller .23. In brief, these amount to a ground instead of tool finished crankpin, improved provision for shaft lubrication, improved low friction shaft bushing material instead of bronze, broached rotary valve port, large radiused cylinder ports instead of square ended, and two, instead of four, hold-down bolts. The backplate position is now clearly marked and the combustion chamber is contoured on both intake and exhaust sides instead of on exhaust only, and tapered, instead of flatted, shaft drive is used.

The manufacturers claim the .35 to be

their best yet, and these extra features and performance confirm their belief.

With the standard K & B double ratchet needle assembly, there is nothing to be desired in the mixture control department. Adjustment is progressive, positive, and stays put. As when choking most high speed engines with fairly advanced rotary valve timing, it is good policy to remove the finger from the intake as maximum compression is reached to prevent fuel from returning to the tank under the influence of crankcase compression.

Apart from this, running and handling are normal with no vices. The new Torp is very smooth in vibration intensity at all speeds, attributable, no doubt, to the piston design and careful balancing. Cold starting is easiest with a fairly generous port prime and a wet crankcase, but when hot, and using the venturi reducer, a single choked flip is usually sufficient. Without the reducer, a small exhaust prime is advisable.

TEST: K & B Torpedo .35

Plug: K & B Std. short reach, as supplied. 1-1/2 volts to start; Fuel: Supersonic 1000; Running Time prior to Test: 1-1/2 hours; Bore: .790; Stroke: .713; Weight: 8 oz.

Power Prop	*RPM*
10 x 8	12,000
10 x 6	12,800
9 x 8	13,200
9 x 6	14,250
8 x 8	14,600
8 x 6	15,400
7 x 10-1/2	14,600
7 x 9	15,300
7 x 8	15,800
Top Flite	*RPM*
10 x 8	11,100
10 x 6	12,000
9 x 8	12,350
9 x 6	13,250
8 x 8	13,800
8 x 6	14,550

END

Radio Control News

(*Continued from page* 21)

associated components. *Selectivity* is the ability of a receiver to differentiate between the frequency to which it is tuned and the frequencies on either side. This is basically a function of the tank circuit design. This means that a selective receiver, tuned to 27.255 mc, will not respond to 27.250 mc or to 27.260 mc. Unfortunately, the super-regenerative receivers that are used for radio control work are fairly broad, and unless careful consideration is given to their design, they will pick up signals as much as 1 mc, or more, on either side of the resonant frequency. Before crystal controlled transmitters were required, the transmitters were of the self-excited type and had a tendency to drift to one side or the other. In this case, a broad tuned receiver was very desirable.

In our opinion it would be impractical to attempt to operate on two frequencies in the 27 mc band. The lower frequency limit is 27.230 mc and the top limit is 27.280 mc, thus giving a band spread of but 50 kc. This would mean need for a more complicated receiver and, without the FCC frowning upon the idea, individual crystals controlling each frequency. We don't say it can't be done, but it just seems impractical. Guess we'll get some comments on this. Incidentally, a seeming lack of sensitivity is sometimes caused by lack of proper tuning to the desired frequency. Also, a seeming lack of selectivity is sometimes apparent, caused by tuning the receiver to close to a strong signal. Hence, it is very important to perform a distance check when tuning your receiver. When using a slug tuned tank circuit, and proper tuning procedures, there should be very little, if any, need to make any kind of check whatsoever beyond seeing that the plate current is at the proper value. We know many users of our two-tuber who have not touched the frequency tuning adjust-

(*Continued on page* 44)

Here They Are Fellows!

Monogram NEW

Speedee-Bilt Models of Famous Aircraft

B ★ 24 Liberator

46 Molded Plastic Parts
49 Finished Balsa Parts

More B-24's were used in World War II than any other 4-engine bomber. B-24 guns knocked out 4,189 enemy aircraft.

Super Deluxe Kit H-4 $4.95

The Models You Asked For — The Features You Want — Finishing Materials Included

You asked for them, fellows. In the thousands of letters recently received from you model builders, more of you asked for the sleek B-17 and the fat-bodied B-24 than any other aircraft. So here they are—true scale copies of the big fellows pictured above and in full glorious color on the kit boxes at your favorite hobby shop.

You liked our twin-engined bombers last year. You'll like these four engined jobs even more, for you'll build them with the most fabulous kits that have ever been produced. There has never been anything like these kits before. They provide detail and realism and scale exactness never found in any other kit. And even with four engines, they are easier to put together . . . more fun to build . . . than simple, single engine planes, because all parts are completely finished.

What's more, the patented balsa Monofoil wing and balsa Monofuse fuselage are completely prefabricated. The wings especially are a joy to see . . . all hollow . . . feather-light . . . thin balsa . . . with machined leading and trailing edges and double airfoiled to exact shape. The plastic parts are the finest, most costly acetate, with super detailing molded in.

These kits are complete too. Everything you need is included. You even get four full one ounce jars of Mono-Dope in the authentic colors of the real plane and a large tube of Mono-Glue, the cement that dries quick and really holds. These products are made for Monogram kits and you use them on the plastic as well as the balsa parts with perfect results. Complete decals included too—insignia, squadron markings, bombing missions, enemy plane score keepers, etc., all in authentic colors.

In addition to big full size, three-view plans, you'll get a 16-page assembly instruction book, with complete details and dozens of assembly pictures.

Whatever you do, go see the new Monogram four-engine bomber kits at your dealer. The B-17 will be ready October 8th and the B-24 on October 29th. Start enjoying the thrill of a lifetime by building your choice as soon as you can.

Super Deluxe Four Engine Bombers

Build These Famous Bombers With These Fabulous New Kits!
The Finest Model Building Kits in Aircraft History!

MORE DETAIL . . . MORE REALISM . . . YET EASIER TO BUILD THAN EVER BEFORE WITH ALL FINISHED PARTS!

Check the plastic and balsa parts and the other features that make up these fabulous new Monogram kits. Then see the actual parts in the big bomber box (size 21 x 11 inches) display at your favorite model store, with each part in its own compartment as illustrated below. Note the details in the plastic parts—the smooth, perfect machine finish of the balsa parts. Especially note how the parts fit—how they join together. Then you'll know why Monogram model builders make such beautiful models and why they have so much fun.

1 ★ Four Plastic Engine Nacelles

Paired in halves, they fit perfectly over the Monofoil wing airfoil.

2 ★ 46 to 50 Detailed Plastic Parts

They include crew members, such as pilots, co-pilots, bombadiers, turret, tail and nose gunners, navigators, etc., props, cowls, engine nacelles, nose, canopies, turrets, machine guns, pitot tube, radio mast, astral dome, landing gear struts, etc.

3 ★ Mono-Dope in Authentic Colors

Four full one-ounce jars in required official colors. No slow-drying enamels are needed.

4 ★ Plastic Propellers and 4 Cowls

Scale three-bladed props and detailed cowls. Props turn freely mounted on cowls.

5 ★ Mono-Glue. Use on Balsa and Plastic

Finest model builders cement. Large one-ounce tube, ample for model.

6 ★ Prefabricated Balsa Fuselage

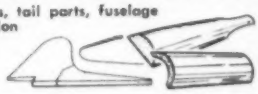
Die cut and machined balsa parts, plus plastic parts

7 ★ Famous Monofoil Balsa Wings

The patented hollow wing that revolutionized model airplane building.

8 ★ 49 to 51 Finished Balsa Parts

Machine cowlings, tail parts, fuselage and other precision parts.



9 ★ Decal Insignia and Markings

Insignia, squadron markings, bombing missions, score keepers, etc.

10 ★ Three View Plans and Assembly Book

Full size, three-view plans and 16 page assembly instruction book.

B ★ 17 Flying Fortress

50 Molded Plastic Parts
49 Finished Balsa Parts

B-17 precision bombing paved the way to World War II invasion of central Europe.

Super Deluxe Kit H-3 **$4.95**

If no dealer near you, add 35 cents for postage and packing and write to address below.

MONOGRAM MODELS, INC. ★ 3421 West 48th Place ★ Chicago 32

ment for the past year of flying.

In response to several inquiries regarding our transmitter article in the August issue, we wish to say that the schematic is correct, using 5-35 mmf for the main tuning capacitor and 125 mmf for the antenna tuning on the final stage. The photographs show two 5-35 mmf trimmers. This was in error, since when in building the unit for making photographs there was no 125 mmf trimmer on hand. Also, the current drain for the filament supply was given as 270 ma when it should have been 320 ma. Seems as though these little things will happen. A reader also questioned the output of 1-1/4 to 2 watts. He said his tube manual gave 1/2 watt as the limit. We're both right, inasmuch as the two values are for different operating characteristics. The tube is rated at 1-1/4 watts for Class C operation but, for the limited time the key is depressed, it will take and deliver 2 watts with no great strain.

There are few model builders, especially among the more experienced ones, who do not make some modifications on kits which they are building. Our favorite modification on RC plane kits, and one which we've persuaded other builders to use with good results, is shown in Fig. Y. Live Wire Trainers and Bootstraps have survived exceptionally hard landings and head-on collisions with buildings and the terra-firma with nary a sign of structural damage. The floor should be laminated from two pieces of 3/16 in. medium hard balsa and should extend from the firewall to the rear of the wing and to both sides of the fuselage. The relay is shock mounted (using the two-tuber type receiver) on the firewall and the B batteries mounted solidly in their case on the firewall. The filament and actuator batteries are mounted below the floor and are accessible through a trapdoor. The actuator and receiver are mounted on top of the floor and, in general, the installation can be made much neater.

We would like to point out the reason for a seeming lack of regard for club contest notices which are sent to us. Many notices are received only two weeks from the time of the contest. Others get in a little sooner but not quite soon enough to catch our deadline, which is usually five to six weeks prior to the time MAN hits the newsstands. The only thing we can suggest, fellows, is to try to get notices in sooner, or best of all, send in the results of the contests. After all, other modelers in other parts of the country who can't make it to your event are still very much interested.

Here's the latest information on our British cousins and their discussions with the governing powers on radio control. It was found that 75 per cent of the people using radio control equipment were operating commercial units. This means completely built-up receivers and transmitters, a figure which we believe to be almost double that for this country. A license entitles the holder to operate radio control units within five miles of the address on the license. Over five miles' distance entails notification of the fact. Looks like we have it pretty good over here yet. The G.P.O., the governing body on radio transmissions in England, insists that the transmitters be stable and within the allotted band of 26.96 to 27.28 mc. The majority of transmitters in England do not use crystal control and therefore this is a bit of a problem, especially to the home builder. Here again, be thankful we have to use crystal control for our work. All in all, the groups work together very well over there and the G.P.O. is very understanding of the problems involved. All of which brings us around to saying that no one should abuse the privileges we now have for radio control in this country. Things could be much worse than some fliers say, but we do have quite a bit of freedom with RC.

Some of the local fliers in the Mid-Hudson Valley wanted to do some balloon busting but

were at a loss for a gas source. They said small balloons may be filled with hydrogen and described the following procedure:

Wrap a towel around a coke bottle and place in the bottle a few scraps of zinc, about the amount obtained from three or four pencils. Be sure the zinc is fairly clean. Just prior to stretching the neck of the balloon over the top of the bottle, pour about 2 oz. of muriatic acid (obtained from drug or hardware stores) in the bottle. Place the balloon on the top of the bottle at once. The action of the acid on the zinc produces hydrogen gas under enough pressure to inflate the balloon. Be sure to do this outside and do not attempt to keep the gas in the bottle. Tie the neck of the balloon and attach a very lightweight silk thread to it and prepare to see how many attempts you have to make before you can get it. Several pins on the leading edge of the wing might help. If the diameter of the balloon is kept to about 10-12 in., the amount of hydrogen involved will cause no damage when the balloon breaks. Of course you could wait until the next street parade comes to town and get a helium filled balloon; however, their life is fairly short.

R. E. Schumacher, Consulting Engineer for Babcock Radio Engineering, Inc., Van Nuys, Calif., asks that we publish this information:

"Since our production filters have a higher output than expected, we are now recommending a 22-1/2 volt C (505E) battery for the 60 volt or lightweight battery complement of the BCR-4. For the heavy duty or 67-1/2 volt B supply we recommend a 30 volt C battery (U20E). The use of this C battery supply will eliminate any microphonic tendencies without reducing the sensitivity of the set."

New Items

Every issue we come up with something that we say is the "hottest" thing to date. What's the latest? It's news of Raytheon's new improved RK-61, which promises a guaranteed possible life of 25 hours. This compares with an unofficial five hour life at present. We've run well over 150 hours on our two-tuber with the old style tube, so this new version should open up new possibilities for RC work. Several new receivers are ready to go and we'll present them to you as soon as Raytheon announces the new tubes are in production and ready for the market. Even audio type receivers may be built, using the RK-61 to replace two conventional hard tubes.

From Irv Megeff of ESSCO, 58 Walker St., New York City, comes news of their new vibrator power supply. This very compact unit, which measures 4 x 5 x 3 in., delivers 180 volts at 40-50 mils when operated from a 2 volt DC supply such as one cell of your auto battery or one of the individual 2 volt wet cells. This output is more than ample for any transmitter. A lot of the more serious minded RC fliers are adopting this type of supply since it affords a more constant output, when properly used. The following items are also from ESSCO and we believe they will be of interest to quite a few fliers. For owners of the Telecommander receiver, ESSCO has a two-tube conversion kit to improve relay operation. ESSCO, in collaboration with Electronic Engineering Co., Inc., of Baltimore, Md., will market three to five-tube sub-miniature receivers, including a midget super-het job, which, being like the average home radio, will give greater selectivity. For immediate delivery they also have a sub-miniature tube version of a set similar to the Babcock three-channel receiver.

Bonner Specialties, 2900 Tilden Ave., Los Angeles, Calif. are now marketing the Infinite Position Control servo motor. This 1 x 3-3/8 x 1-5/8, 2-1/2 oz. servo meets Army Drone Specs for thrust, and operates on 3 volts. Complete with a carbon brush motor, built-in noise filter and *no* electrical limit switches to get dirty, this $12.50 servo will enable you to trim

any multi-channel plane for its best flight characteristics. It is, however, not recommended for single-channel radio installation. This should be an excellent item for RC boats or cars. A plane using this for its elevator servo can make "out-of-this-world" take-offs and landings.

If you want something simple but very effective looking in the line of RC boats, there is the Swanee, an old Mississippi River steamer. With all die-cut plywood laminated parts, this is perhaps the best boat for the beginner we've seen. Lots and lots of space for practically any type installation. A chain paddle wheel drive is supplied for use with a standard Wilson motor and gear box. We intend to install red lights and put some Lionel or American Flier train smoke in the "boilers" for some effective night runs. This boat available from Radio Control Models, Box 333, Station D, New York 3, N. Y. for $9.50.

Many builders have wondered where to get an assortment of hook-up wire for benchwork and transmitter and receiver installations. The Belden Manufacturing Co. of Chicago has, through most radio supply dealers, packages of six different colors of wire in 25-ft. rolls in individual boxes. Solid wire for transmitter work is No. 9841 and stranded wire for receiver installations is No. 8943. A package containing six assorted colors, in easy dispenser boxes, may also be had. No. 8864 is for the solid wire and No. 8865 for the stranded. For extra flexible lightweight wire we use indoor antenna wire (Belden No. 8014). END

CORRECTION

CANNED RECEIVER—October Issue By-Pass condenser, Key C-5, was given as .05 disc ceramic on both drawings and in text. This value should have read .005, and not .05.

MAN at Work

(*Continued from page 6*)

the second largely ignored. Perched at the head of the sheet metal strip to watch the fireworks, see whose fuel was most popular (do this sometime and you'll be amazed), what engines, etc.

Guys walk up all around you, start up engines, put down the vibrating crates, let go, then run off into the corn. If you move your head an inch, you'll lose an ear. Ships over you, behind you, on each side, maybe 10 engines going wide open. Three, four, maybe five chaps trying to put down their ships for take-off, almost on top of each other. It's a world of din, action and fume. These A jobs have a far smaller percentage of crack-ups than the bigger ships, particularly C. Why? Are these jobs bigger for their power? In 1948, we recall, 375 sq. in. was the average wing area in A. Today, we have .09's bigger than that, and .049's almost as big. In 1946, remember some 225 sq. in. ignition jobs at the Nats. Now it's 450, 550 and up. And thermals? Ray Matthews had one free flight go 30 miles north, five miles out in the lake, just as a water skier happened along.

* * *

Endless hassles and bull sessions during the evenings. Got into a wonderful one with George Aldrich, Don Still and a few others about combat design. Man, this is the fruity event! Highest points were scored by Shirley Austin, Kirkwood, Mo. Aldrich, who watched this gal outfly one of the best stunt boys in the country, cried, "Man, she ate him alive!" On prize night, talked with Shirley, her father and brother. "I was lucky," she explained. "I had a slow ship and the boys had fast jobs." Herein lies a story. Shirley was flying a Half Fast, probably the country's best combat job.

Used by the Kirkwood group, these jobs scored 1,100 points in 10 combat flights, including 15 cuts and two kills, both kills by Shirley. There are ships that are faster, others that are more maneuverable, but none combines these traits as Half Fast does. It's a wing, straight trailing edge, tapered back leading edge, spanwise flipper, tapering toward tips.

Anyway, Aldrich bet his lovely Fox .35 against Still's prize K & B .35 that he could turn tighter with Foxy (MAN, Nov. '53) than Still could turn his ship, unseen at this point. So Still showed up the next morning with a wing, or, should we say, plank. Aldrich blanched. But, while Don certainly turned sharper (now you see it, now you don't), George's slower ship looped more tightly. There was 40,000-ft.-in-the-air talk about Don's job being capable of loops under an outstretched hand, which would be progressively lowered toward the ground. Ouch! Foxy outfoxed itself in the combat event: Aldrich cut his own streamer! Someone flew right through the middle of Still's plank. The low-down on combat is that a fast ship is good against another fast ship, but the screamers get into trouble with a slowpoke. Outer space aspects of combat! Watch a saucer do battle with a wing and you wonder if this is the Nats! Don Still recalled once having flown up on a guy whose streamer snagged Still's prop, stopping the engine. The guy ran off his tank, towing Don's ship all over the sky, despite Still's desperate efforts to break loose.

* * *

▸ Nordic towline, on Friday, held us enthralled most of the day. Gliders all over the place. According to Dean, a number of them were on a par with European designs. Nordic is an utterly impractical event to be tied in with a big meet. The Europeans who favor this sort of thing naturally plan a glider meet with little or no distraction from other events. Suppose you had entered 13 events (Hi, Joe) to bid for the Championship. Nordic looks good. But there are five rounds. So many gliders, that you wait an hour between rounds, to say nothing of chasing for a timer. Five rounds, five hours. Downwind of the field for miles, guys loping across the main highway, eyes upturned, puzzle motorists. One contestant, back after wading a river, remarked, "Gosh, it's really snowing gliders and Half-A's." Dozens are airborne at once. Hour after hour. Puzzle: if chaps with reels let out the prescribed amount of line for measuring, how come the reels make noise on launch?

* * *

▸ Whenever we get mixed up with the Nats, either as a contestant or helper, things happen. Once had a 15 second Wakefield flight. Also, spectacular RC flight years ago with the aid of powerful binoculars. So Dean wants us to help launch his nifty Nordic. If you are not a glider man, you are surprised to learn there is more to this deal than meets the eye. You point the nose up, like so, (mind the tail doesn't hit you in the head)

and simply open your hand when you feel the lift. Practice flight went fine. Six minutes. Came the big moment. Small boys on bikes are fouling up lines, tripping over them right and left. Somewhere up forward, Dean's arm goes up. There's a tug. Lots of engine noise, can't hear a thing. People in the way, can't see Dean. No lift. What do you do with this thing? Meanwhile, Dean's yelping to let go. But we follow him and finally let go. Poor Bill is backed up against a truck, real desperate like. Does 43 seconds. Says Bill, of the launch, "I thought you were mated to me for life."

About this time we became conscious of Woody Blanchard sprinting hither and thither, from event to event, winding rubber, starting engines, chasing, always with a smile. When you see a guy beating out his brains, you know he has an eye on the Championship. Also Bill Gelvin who, 'tis said, has won free flight four out of five times at the Nats. And Joe White, of the White brothers act, that always gets everyone confused. Sure enough, all three cop the Championships in their age groups.

* * *

▸ Open stunt, U-control scale, and Team Racing finals tied us down Saturday. Having seen Granger Williams win team racing in a hair raising finish at the 1952 Nats, described it as pure distilled excitement. Lots of guys said we should have our head examined. But it isn't yelling spectators who count, for with hardly anyone looking on, this year's featured race was the most exciting thing we've seen at any Nationals. Saw Bobby Huffer take the semi-finals, then the feature, flying George Moir's Fox .29 speedster. The three chaps who made up this team worked like lightning. They were hot, the plane was hot, and the engine, reworked by Moir, was white hot. The ship boiled around, lapping everyone like mad; before the engine could stop, the helpers, counting laps, yelled out. Huffer shut it down, landed right by them. Pit stops in less than 15 seconds. Moir cranked, let go of the ship on the first couple of pops. Once, a lead for plug-in boosters snapped off. Cranked so fast his hand was a blurr. Within few seconds caught wise, had spare alligator clips, attached, and off to victory.

The pace steps up. Scale jobs come out of hiding as judges end their deliberations. Circles are scattered around the concrete aprons. Behind you, Team and Open Stunt go on steadily. In front, flying scale. To the right, two circles of combat. Next to that, jet and speed. You yell to be heard. A B-29, four .29's roaring, lumbers by, bomb bay doors open, something falls out, goes *bang*

on the concrete. Bombs! And we thought Conrad exaggerated. No. One scale man, Tom Dean, flying his Aeronca Duster, has engine trouble, doesn't complete his flight! Yoemans does, with a Neptune. So does Jimmy McCroskey with a Mustang. Behind Jimmy's car, looking at plans, scrap books, pictures, sketches, representing eight months' research, hours of it in the cockpit of the actual ship modeled. Model so scaled that commercial products, wheels, etc., are true scale. Froom spinner right with 1/64 in. When a kid has special decals made up for the tiny lettering, you've got to shake your head and wonder.

All Sunday morning on carrier. High speed runs, low speed runs, deck landings. The caliber of flying in many events is enough to scare us. The significant thing in carrier was Dave Domizi's 125 sq. in., 22 oz., Fox .29 Guardian. Put away those lovely Corsairs, Skyraiders, et al. Domizi has the idea. Ship is small, so it really scoots: it's practically a team racer. Slows down fairly well because it is small and light enough to poop along on almost nothing from the low-speeding Fox. Landings? You can't miss them. First try. Anybody can make this simple ship. Just a few ribs, etc.

But you can't begin to describe this stuff. In C speed, you have to beat 160 to win. Jet times are fastest in history. Models are flying faster, higher, tighter, better, in all events. Helicopters go sky high. Flying scale Half-A's turn a small portion of a runway into a miniature country airport scene. But, oh, that C gas! That we can't buy! Crashes are spectacular. That's the four-day Nationals, the famous condensed Nationals, as they now are called.

* * *

After the FAI and Wakefield world-wide finals at Suffolk AFB, Westhampton, N. Y., convinced that the real hero is the proxy flier. His is a terrific responsibility. He gets the plane he is to fly at the last minute. There are special instructions. Not nearly enough time to master the job. If something goes wrong—a warp in transit may crack up one of the world's most famous airplanes—what does that make you? Saw one chap sitting off by himself and it wasn't the wind that was in his eyes. Bill Dean (the one from Massachusetts) had Gorham's VTO to fly. Diesel-powered, Elfin, we believe. Watched fourth and fifth round take-offs. He went off runway to get away from people drifting about. Ship stands, nose to sky, with the wind quartering from the rear. When it jumps off, it does a peculiar, swooping arc around into the wind, going into proper climb as it does so. Dean marks the pavement where the stab will line-up. He starts and operates the Diesel like a master—and Diesels gave the American boys some rough moments. There's the fuse, the fussing with getting the ship standing correctly on its tail, then the tank must be refilled from over the wing, check the fuse, line up the ship, fill the tank, etc. He does this three times on the fifth round—it would drive us nuts—and gets away beautifully. The engine stopped at six seconds and the chance for second place was gone! Did overhear some of the visitors say certain planes were flown better than if their owners had been there.

Got a charge out of Lanfranchi from Switzerland. He's been around for years. Forgets nothing, keeps banging away, all the time joking with contestants, exchanging jibes with modeling spectators, makes a hit with everyone. King, the Wakefield winner, had a mighty sharp version of a Civy Boy in FAI. Probably the best glide in the place, but he couldn't get his power straightened out. If he did, no telling what might have happened. Can you imagine one guy winning both events? Biggest thrill was Kneeland's fast, steep climbing. The fifth round downdraft

that ruined him was a disaster, so unexpected, so dramatic, so complete that the excited crowd was shocked into hushed comments. What a shock that must have been to Dave!

* * *

Have had chance to fly with a few of the many commercial product samples sent in. Webra .15 Diesel proves very easy to start under all conditions, hot and cold, flexible to operate and not critical on head or needle. Few bench runs on new BWM .15 now being imported from Germany. Nicely turned out job. Made by an ex-Luftwaffe pilot, they say. And an ESSCO transmitter. Has wet cell storage battery, power pack, battery charger (plug into household current). A two-tuber, interested this one-tube man because of the important effect of antenna tuning. O & R No. 2 fuel. As you know, we use many brands, all successfully. In RC, a heavy ship in hot weather makes temperature control critical: lean run and you blow your gaskets or kill compression. Open the needle on the No. 2 and the smoke pours back. Plenty of lubrication, imagine. Also the new O & R plugs. Appears to be a hot plug, which is good for starting with wet engines or with fuel into which extra castor has been dumped. Ground checked Babcock single-channel out of sight. And this is the end of the line. Lots of news to catch up on next month; with the Nats and Internats out of the way, we can all get back to business. END

The 1954 Wakefield Winner

(*Continued from page 22*)

designer's own working drawings and sketches made of the actual model at Suffolk AFB, Long Island — the scene of the last Championships on July 26. Construction is fairly conventional and will present no problem to anyone who has previously built a Wakefield. Since the drawing is fully detailed and all material sizes are listed, we have kept the construction notes down to a minimum and only covered the more important angles.

First, draw up full-size working plans — taking particular care to duplicate the correct incidence settings. The untapered spars should be cut from sheet balsa, using a straight-edge (preferably metal) as a guide for the razor blade.

Build the constant-chord wing in four stages, starting with the *left-hand inner panel*. Pin the L.E. and T.E. over the plan, packing up the front edge of the latter with slightly sanded 1/16 in. sheet scrap. Add the L.E. braces, the ribs (notched-in T.E. 1/16 in.) and the two upper spars — in that order. Note that the two dihedral-break ribs are tilted, using the angle templates.

When dry, unpin from the board and pack up the outermost rib 2 in. Now build the *right-hand inner panel*, using the same sequence as before. When dry, unpin from the board, pack up this last panel (2-1/2 in.) under the center rib and build up the *right-hand tip panel* – gradually decreasing the T.E. packing (at front edge) at each rib station, until it is only 1/32 in. at the last rib.

Make two vertical cuts in the tip L. E. strip and squeeze cement in the slits before carefully curving to the correct profile shape. Repeat the procedure for the remaining *left-hand tip panel*. Trim and sand the L.E., T.E. and tips to the correct section; then add the remaining gussets and braces, the L.E. sheet and the rib cap strips (upper surface only).

The geodetic stab takes a little longer to build, but really pays off by its resistance to warps. Pin the L.E., rear lower spar, and T.E. down to the board. Add the two tip ribs and offset these 1/16 in. to the right, to allow for the built-in twin rudder settings.

Now cement the ribs (with the *lower* cross slots) in place (notch in T.E. 1/16 in.), allow to dry; then follow with the remaining ribs, notching the latter over the first ones. Complete by installing the upper front spar, trimming the L.E. and T.E. to the correct sections, and adding the L.E. sheeting. The fins are cut from sheet, tissue covered, and cemented in place *after* the stab has been covered and doped.

Build two fuselage sides in the usual way (one atop the other) to ensure identical frames, then join by means of the two assembly formers—which should be lightly cemented in place. Pull in at the nose, install the round nose former, then join at the tail and add the diagonal cross braces to the open sides.

When dry, remove the assembly formers, then taper pieces of longeron size strip for the separate tail-cone and build this on to the end of the main fuselage, lightly cementing in place. Next, install the rear peg anchor pieces and follow with the four stringers and nose sheeting. Complete by installing the parasol-wing fittings, the retracting take-off leg and the stab (attach upper fairing) so that it tips up 45 degrees.

The block for carving the single-bladed airscrew and the fittings are detailed on the plan. All metal parts (and especially the hinge) must be cemented and bound firmly in place. The flying surfaces and propeller of the original model were covered with pre-war Jap tissue (Red) and the fuselage, spinner and fins with British lightweight *Modelspan* (Yellow). The flying surfaces are given two coats and the fuselage three coats of clear nitrate dope. For additional strength, the propeller is also covered (with red tissue) and given a couple of coats of dope.

This job performs best on a motor consisting of 13 strands of 1/4 x 1/24 in. *Pirelli* or its equivalent in cross section. In the actual contest, a new 22 strand 5/32 x 1/24 in. *Pirelli* motor was used for every flight. Broken-in length of the motors should work out at about 37 in.

Slide the wing backwards or forwards on the assembled model to achieve a 50% chord balance point and trim for glide by adjusting the wing position and incidence—leaving the stab setting at plus 1 degree. If there is insufficient left turn in the glide, cement a small balsa wedge between the left hand fin and the stab, to increase the built-in offset.

Slight side thrust adjustments may be needed to tighten or reduce the turn under power, as desired. Maximum turns for a broken-in motor are about 780 (as used in the contest). Dead air performance is 2-1/2 minutes, so only slight thermal assistance is needed to reach the new maximum of three minutes. The correct contest trim is a fairly steep climb to the right, with a switch over to wider left turns on the glide.

Now that five official flights are needed in

ADVT. INDEX, NOVEMBER, 1954

the Wakefield (and the other International F/F events), the importance of having a well-trimmed spare model is obvious. It proved a vital factor in Alan King's case, as he lost his number one model in the fourth round and had to use his second line job for that final flight which decided the result of the 1954 Wakefield. END

AMA Sanctioned Contests

OCTOBER

10—*Bakersfield, Calif.:* Bakersfield Record Trials for FFG. Clinton Merrill, Contest Director, 212 Washington, Oildale, Calif.

17—*San Diego, Calif.:* Class AA Convair Aeromodelers' Second Annual Meet for FFG, RC, CL, combat and CLS. James G. Saftig, C.D., 1560 Froude St., San Diego 7, Calif.

18—*Boston, Mass.:* Class AA Third Annual Boston Model Rally for FFG, OR, TLG, and RC. Lee Renaud, C.D., 330 Hyde Park Ave., Boston 30, Mass.

24—*Sacramento, Calif.:* Class AA Northern California Free Flight Council Meet for FFG, OR and TLG. John Lenderman, C.D., P.O. Box 216, French Camp, Calif.

31—*Fresno, Calif.:* Fresno Gas Model Club Record Trials for FFG. Jim Scheidt, C.D., 2225 Brown, Fresno, Calif.

31—*Tulsa, Okla.:* Class AA First Annual Tulsa Glue Dobbers' Radio Control Meet. Willard H. Kehr, 4940 N. Johnstown, Tulsa, Okla.

NOVEMBER

14—*Bakersfield, Calif.:* Class AA Bakersfield Semi-Annual Meet for FFG, TLG, OHLG and OR. Clinton Merrill, C.D., 212 Washington, Oildale, Calif.

28—*Fresno, Calif.:* Fresno Gas Model Club Record Trials for FFG. Jim Scheidt, C.D., 2225 Brown, Fresno, Calif.

DECEMBER

12—*Bakersfield, Calif.:* Bakersfield Record Trials for FFG, TLG OR and OHLG. Clinton Merrill, C.D., 212 Washington, Oildale, Calif.

26—*Fresno, Calif.:* Fresno Gas Model Club Record Trials for FFG. Jim Scheidt, C.D., 2225 Brown, Fresno, Calif.

29-31—*Miami, Fla.:* Class AAA First King Orange Internationals for FFG, FFFS, FAI Power, RC, TLG, OR, OHLG, CL, CLS, combat, CLFS and TR. Charles R. Quick, C.D., 1896 N. W. 36th St., Miami, Fla.

Berkeleys INCOMPARABLE SUPERIORITY!

Embodying the finest in design, with completeness found only in a Berkeley Kit, these models will satisfy the exacting modeller.

Pre-Fabricated Controlines

HERE IS WHAT YOU FIND WHEN YOU OPEN A BERKELEY KIT —

The hardware and metal parts such as deep-drawn cowls, wheel pants, spinners, stampings and fittings are included as required by each design. Controline Kits include all the necessary bell-cranks, elevator horns, pushrods, hinges, etc. In addition you will find such small items as wheels, bolts, nuts, washers, reinforcing tape, die-cut or formed celluloid, and other hard-to-get parts.

Your Berkeley Plan will be Full Size, with three or four times the minimum detail required to actually build the model. The full size layouts and extra details clarify construction, speed assembly, and aid in repair work and modifications.

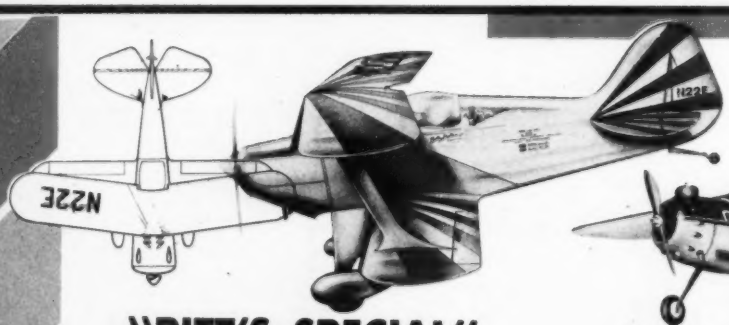
The Balsa and Mahogany in each kit is selected from the finest grades available, pre-shaped or precision die-cut as required.

Yes you get a lot when you buy a Berkeley Kit. You get more in material value, more in design engineering, and more in potential performance.

$6.95

North American
"AJ-1 SAVAGE"

For two .045 to .099 Engines plus Jetex 100, 200 or Jetmaster 150 unit, for exact scale power. 27" Wingspan — ¾" Scale from factory plans.



"PITT'S SPECIAL"

For .19 to .33 Engines — 25½" Wingspan

$4.95

This colorful stunting biplane stands apart on any field. Decals include red flare design. Metal cowl, wheel pants, celluloid, etc.

$5.95

CESSNA "195"

For .19 to .49 Engines — 36" Wingspan

This beautiful lightplane features Step-Keel construction. Formers are positioned by a removable jig. Metal cowl, die-cut parts.

$5.95

North American "T-28

For .23 to .36 Engines — 30" Wingspan

This new Air Force Trainer aligns itself on the Step-Keel, included in kit. Tri-cycle landing gear, metal cowl, bubble canopy, U-Control.

$5.95

"MINNOW" Cosmic Wind

For .09 to .36 Engines — 28" Wingspan

Probably the most famous Goodyear Racer of all, Step-Keel Fuselage, wheel pants, metal spinner, cowl, complete decals, canopy, U-Control.

North American
"AT-6 TEXAN"

(U.S. Navy Designation SNJ-5)

For .19 to .33 Engines — 31" Wingspan

$4.95

Authentic and complete down to both Army & Navy decals, the AT-6 is one of the most popular kits of all time. Performance is excel

buy **BERKELEY** at your local dealer!

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Berkeley's Pre-fabricated FLYING SCALE FIGHTER Controliners*

Embodying the finest in design, with completeness found only in a Berkeley Kit, these models will satisfy the exacting modeller.

North American "P-51 MUSTANG"

37" Wingspan — For .19 to .36 Engines

$5.95

For the detail conscious model builder this kit is a must. Landing gear and tailwheel is retractable and extensible in flight. Flaps, elevator and rudder control are operated through bellcrank.

$4.95

Republic "P-47 THUNDERBOLT"

40¾" Wingspan — For .29 to .65 Engines.

History was written with this famous fighter of World War II. Fully automatic wing flaps and engine throttle control make it possible to duplicate the full scale counterpart in flight.

$4.95

Known as one of the fastest climbing fighters of all time, the Bearcat is an excellent subject for Carrier Deck Flying. "Autotrol" rudder operation eliminates slackening control lines.

Grumann F-8-F BEARCAT

35½" Wingspan — .29 to .65 Engines

"CHAMPIONSHIP" ½A FLYING SCALE

These full One-Inch Scale models have been designed for free-flight flying, and have proven themselves on the contest field. .035 to .049 engines, CO_2 or rubber power is suitable. For controline conversion, .049 to .099 engines are advised. Die-cut balsa parts.

"FAIRCHILD" FIRST IN OPEN AT '53 AND '54 NAT'S.
"AERONCA" FIRST IN SR. '54 NAT'S.

$2.95

Free-Flight Gas — Controline — Rubber

Cessna L-19 "BIRD DOG"

.035 to .049 Engines for Free-Flight
.049 to .099 Engines for Controline

In active duty in Korea, this new liaison plane is perfect in proportions for model work. Plans show it as a free-flight "½A" gas, with details for rubber and controline conversion. Fuelproof decals, die-cut balsa, plywood and celluloid; shaped and notched wing edges; formed gear, etc.

$1.95

STINSON SENTINEL "L-5"

33½" Wingspan

This model is a consistant winner at National Meets. It is a commercial version of the Army's "Flying Jeep."

$1.95

STINSON VOYAGER "150"

34" Wingspan

Equipped with wing slots, this authentically detailed model flys with the best. Designs in this series have been chosen for performance.

$1.95

FAIRCHILD 24 "RANCHER"

36½" Wingspan

Largest in the series is the never to be forgotten Fairchild. Stable, strong, detailed, it is ideal for contest experimentation.

$1.95

AERONCA SEDAN

34" Wingspan

Featured as a landplane, plans show pontoon details for those desiring the added thrill of water take-offs. Finished model is really spectacular.

$1.95

CULVER "V"

29" Wingspan

This low-wing sport plane turns in long stable flights. The tricycle landing gear adds realism to landings.

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The First All-Purpose Gas Model!

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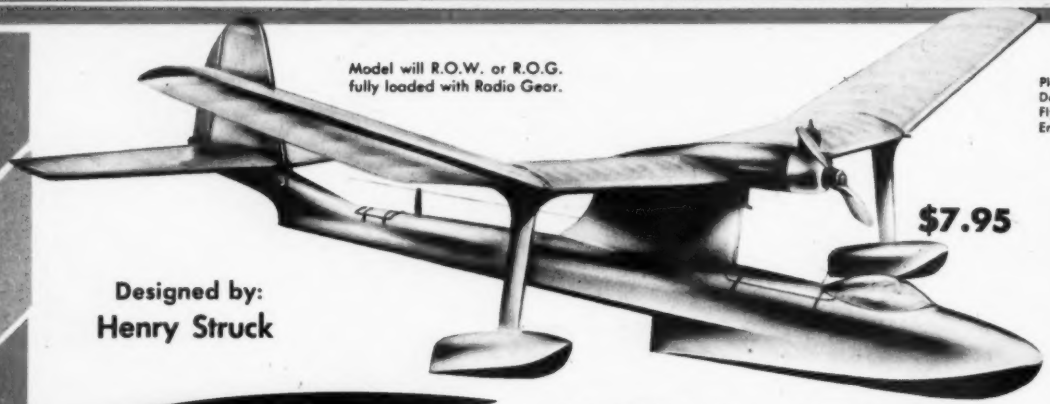
Fly it on Ponds–Rivers–Bays–Lakes or Flying Fields!



Model will R.O.W. or R.O.G. fully loaded with Radio Gear.

Plans include: Radio Controll, Installation Details; Paa-Load Dummy Installation; Hyp Flying Hints; Construction Details; Various Engine Installations; Building Instructions.

$7.95

Designed by:
Henry Struck

Fly it Five Ways:

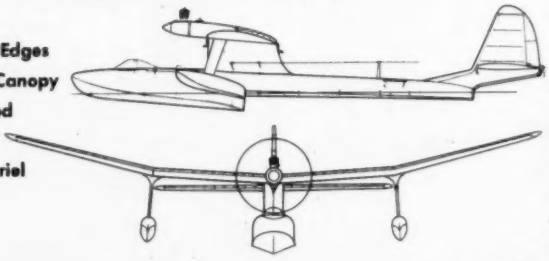
- Seaplane (R.O.W
- Landplane (R.O.G
- Radio Control
- PAA-Load
- Clipper Cargo

Berkeley's "SEA-CAT"

N.A.C.A. Type Planing Hull Design Amphibian

For .15 to .25 Engines — 68" Wingspan

- Detailed Full Size Plans
- Shaped Leading, Trailing Edges
- Formed Celluloid Bubble Canopy
- Die-Cut Balsa and Plywood
- Formed Metal Ring Cowl
- Hardware, Covering Materiel
- Selected Strip Balsa



Here is a model design that has been a full thirteen years in development. It's N. A. C. A. Planing Hull design makes water take-offs easy. Its hull is easily accessible for radio control equipment, PAA Dummy Pilot or Clipper Cargo.

Proven performance on the original test models include: First International Radio Control Flight; Fourth place in a field of seventy in the Mirror Flying Fair (The first R.C. contest for both Struck and the "Sea-Cat"); First in Radio Control at Screamin' Demons Long Island Sound Hydro Championship; Second in PAA-Load at the same contest; and Precision flights carrying over a pint of fuel at the First "World Model Air Olympics."

This airplane is what many model builders have been waiting for. You can now fly your own "Sea-Cat" with perfect take-offs and landings from water or land. Start yours today!

"1/2 A" FLYING SCALE...

$2.95

CESSNA "180"

Cessna's newest light plane, reproduced authentically and in detail. Perfect proportions for free-flight. Full Size Detailed Plans show rubber and controline adaptations. Pre-fabricated construction, Decals, etc.

$2.95

"SUPER CADET"

This is the current version of the "Interstate Cadet," many time National's winner. Authentically detailed and structurally re-designed for "½ A" free-flight. Full Size Plans show rubber, controline adaptations, etc.

For .035 to .049 Engines—35" Wingspan
1" Scale—Free-Flight, Rubber or Controline
.049 to .099 Engines for Controline use

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K&B SWEEPS NATS

19 FIRST PLACES

FRANK ADAMS, famous combat flyer from Louisville, Ky., walked off with high points in the Open Combat event. It's not luck! Frank is a very qualified flyer as he has the most outstanding contest record in Combat. In the past two seasons he has won 18 firsts, 2 seconds and 1 third. "CONGRATULATIONS."

TORPEDO 35 FIRST IN COMBAT K&B's NEW ENGINE USED BY FRANK ADAMS

"The New TORPEDO 35 is the best engine on the market today for Stunt and Combat work, and just remember when better engines are built, K & B will build them."

FRANK ADAMS

While the Torpedo was designed and built for Stunt it too is a versatile engine like the other Torpedos.

•

Jim Patterson flew his Class "C" Free Flight powered by the 35; he won first with 29 minutes 50.2 seconds putting him ahead of his closest competitor by 14 minutes.

•

The manufacturers of the World Famous K & B Torpedo Engines congratulate the many other first place winners at the 1954 Nationals for their fine performance. K & B is proud of the modelers who were using Torpedo engines and their judgment in choosing K & B Products.

SPECIAL AWARDS

"CERTIFICATE OF MERIT"

★

K&B's "Certificate of Merit" bearing the seal of a Gold Trophy is being issued to all First Place Winners at the 1954 Nationals who were using Torpedo engines. They are as follows:

Frank Adams	Op—Combat
Shirley Ann Austin	Sr—Combat
Tommy Baker	Op—A Speed
David Brownlee	Jr—B FF
Robert Cherny (2)	Sr—B FF & ROW
Bob Gelvin	Sr—A FF
Robert Giles	Jr—A Speed
Sherman Hackenberg	Op—R.O.W. FF
Don Helfers	Sr—B FF
Bruno Markiewicz	Op—AB PAA Lead
Jim McCrosky	Sr—C.L. Scale
Jack Oxley	Op—A FF
James Patterson	Op—C FF
Tommy Stafford	Jr—A FF
Walter Vrublic	Sr—A Speed
Martin Wolf	Jr—C FF
Bob Yeomans	Op—C.L. Scale

TORPEDO ENGINES WIN MORE FIRST PLACES

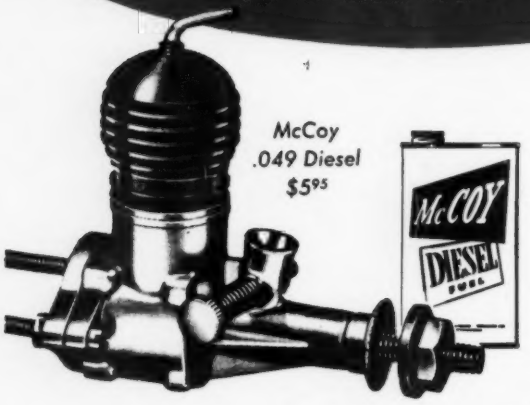
than any make Engine in the history of the Nationals

Leading the field of Torpedoes in triumph was the World Famous Torpedo .19 with 7 firsts followed by the 35 and 32 with 3 each. The Torpedo 15, 23 and 29 had 2 wins each.

K&B MANUFACTURING COMPANY • 224 EAST PALMER AVENUE • COMPTON, CALIF.

The Sky's Full of McCoys

"TO BE A CHAMPION... BEG, BORROW, OR BUY A McCOY ENGINE"



MEET PAA CLIPPER CARGO CHAMPION Hal Roth *of Berkeley, California. His "Blueboy" with a borrowed McCoy Diesel engine set a new AMA record of 23¼ oz. for 42 seconds.*

LET HIM TELL YOU IN HIS OWN WORDS HOW IT WAS DONE:

"I *borrowed* a McCoy Diesel because it has just the right power required for the Clipper Cargo event. And it convinced me... now, I *own* one!

"My ship 'Blueboy' has a wingspan of 72" with 7" chord; stabilizer, 22½" with 5" chord. Weight without cargo box was 6¾ oz.

"Wing and stabilizer covering was pre-war Jap tissue with two thin coats of nitrate dope. Fuselage was sheet balsa with one coat of blue dope... rudders not covered or doped—just raw sheet balsa for weight reduction. Wing construction was normal—a 1/32" sheeting on leading wing edge for rigidity but light weight. This was necessary because of the high aspect ratio—better than 10 to 1.

WHEELS ARE IMPORTANT—"Landing gear was a two-strut type made of 1/16" piano wire. Two-strut gear is more rigid, lighter, and easier to securely mount than corresponding one-strut gear. Also, two strut gear stays in alignment. Location was immediately forward of the cargo box or considerably aft of usual gas model landing gear installations. Aluminum wheels were made by a fellow Oakland Cloud Duster. They are 1" diameter and 1/32" thick with 1/8" diameter hub, ¼" wide. Wheels are true running and wobble free because of wide hub and don't squash as do ordinary rubber wheels. Inasmuch as take-off run is some 30 to 40 feet, wheels are important.

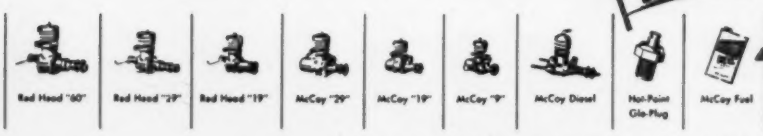
PROPELLERS COUNT TOO—"Various propellers were tried. One, the winning flight of 23¼ oz., a 7x3 Top Flite was used. A 7x2 Tornado worked well also and allowed engine to develop more RPM. On an unofficial flight (due to engine over run) the ship lifted 26½ oz. with a 7x2 Tornado for 2:40. The more load, the more effective pulling power required *from a standstill*. This is best had by a low pitch prop.

McCOY DIESEL JUST RIGHT—"A McCoy Diesel had just the power required—ability to swing a low pitch 7" prop at high RPM. McCoy fuel (which is excellent in all respects), allows use... and broad use... in not only McCoy Diesel engines but all other Diesels, especially foreign makes. Starting procedure is different from glo-plug type and takes a bit of practice to master. Diesels start easy. All in all, the McCoy Diesel has extremely high power, is lightweight and easy to mount. It is capable of much more power than comparable glo-type engines, swings a low pitch 7" prop while glo-plug engines swing a 5x3. The Diesel has another big advantage—fuel residue is not harmful to the model's finish.

BIG FUTURE FOR DIESELS—"In conditions such as at the Nationals, with a good runway and about a 12 MPH wind, I believe the 'Blueboy' capable of lifting 30 oz. dead weight. Above 30 oz., a shock absorbing landing gear will be needed and construction must be stronger. But 30 oz.—about five times the weight of the model—isn't bad."

Hal Roth

McCoy *famous "Checkered Flag" line...*



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